The United States MILLER

Volume 7.—No. 6 MILWAUKEE, OCTOBER, 1879. Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

STOP! **STOP!** STOP!

Purchasing Middlings Purifiers

Until you send your address to Andrew Hunter, who will explain the reason why and show you how to save from $50 to $300 on the purchase of each Machine. "A dollar saved is a dollar earned." members and those who are not members of the Millers' National Association will hereafter reap the benefit of the decision.

Said decision prompted Hunter to reconstruct and simplify his machine, placing it outside of all possibility of infringements from reissues of old patents or any invention in use. Hunter has the good fortune in simplifying his machine to be enabled to compete in price with the poorest machine on the market. Hunter's Purifiers are fully protected by his own patents, he having spent the last eighteen years experimenting on machines for sepa rating by specific gravity. He owns now over fifteen different patents, which cover fully all the principles used in his machines, consequently there is no necessity of purchasing a license or bolstering up with the aid of old patents or reissues.

He warrants better work and greater capacity than any machine in the market.

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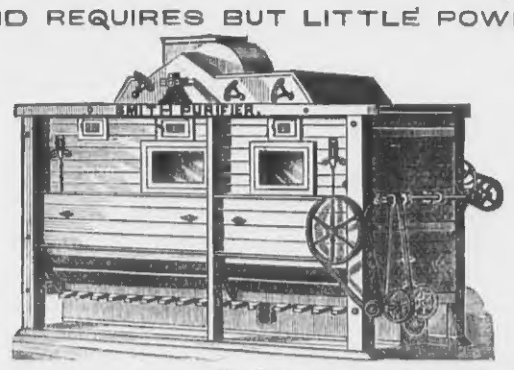
IMPROVED MIDDLINGS PURIFIER.

SIMPLE, DURABLE, ECONOMICAL,

AND REQUIRES BUT LITTLE POWER.



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HAS

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AND MANY OTHER IMPORTANT FEATURES.

A large number are in use in the successful New Process Mills of this country.

We manufacture eight sizes, adapted to the smallest or largest mills. Our prices range from $225 to $600, and cover a license under all of the patents owned by the Consolidated Middlings Purifier Company.

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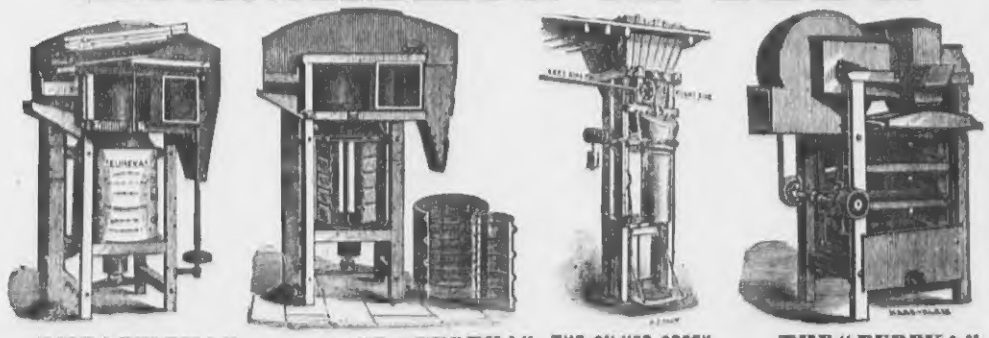

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ALL LICENSED UNDER DOWNTON PROCESS PATENT.

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Which has given on trial the best economy and regulation known in steam power.

We shall be pleased to correspond with any parties desiring prices and information relative to mill machinery or steam power.

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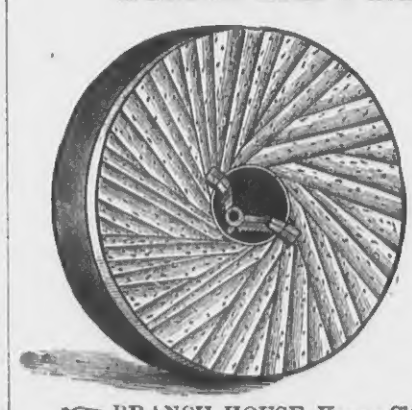

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Is now Receiving More Attention than any other Machine known to Millers, for Brushing and Polishing Wheat.

The superiority of the Becker Brush over all others consists in the following points:

Conical Shape Brush.

Combination Jacket of Punched Iron and Steel Wire.

Raising and Lowering the Brush when in motion.

An Adjustable Fan, to run with or against the sun.

It Scours, Polishes and Separates at same time.

Takes the dust out of the crease of the berry.

Takes the furze off the end of the wheat.

It does not disturb the bran. It greatly improves the color of the flour. Millers say it is a good Buckwheat Cleaner.

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myly ROCK FALLS, ILL.

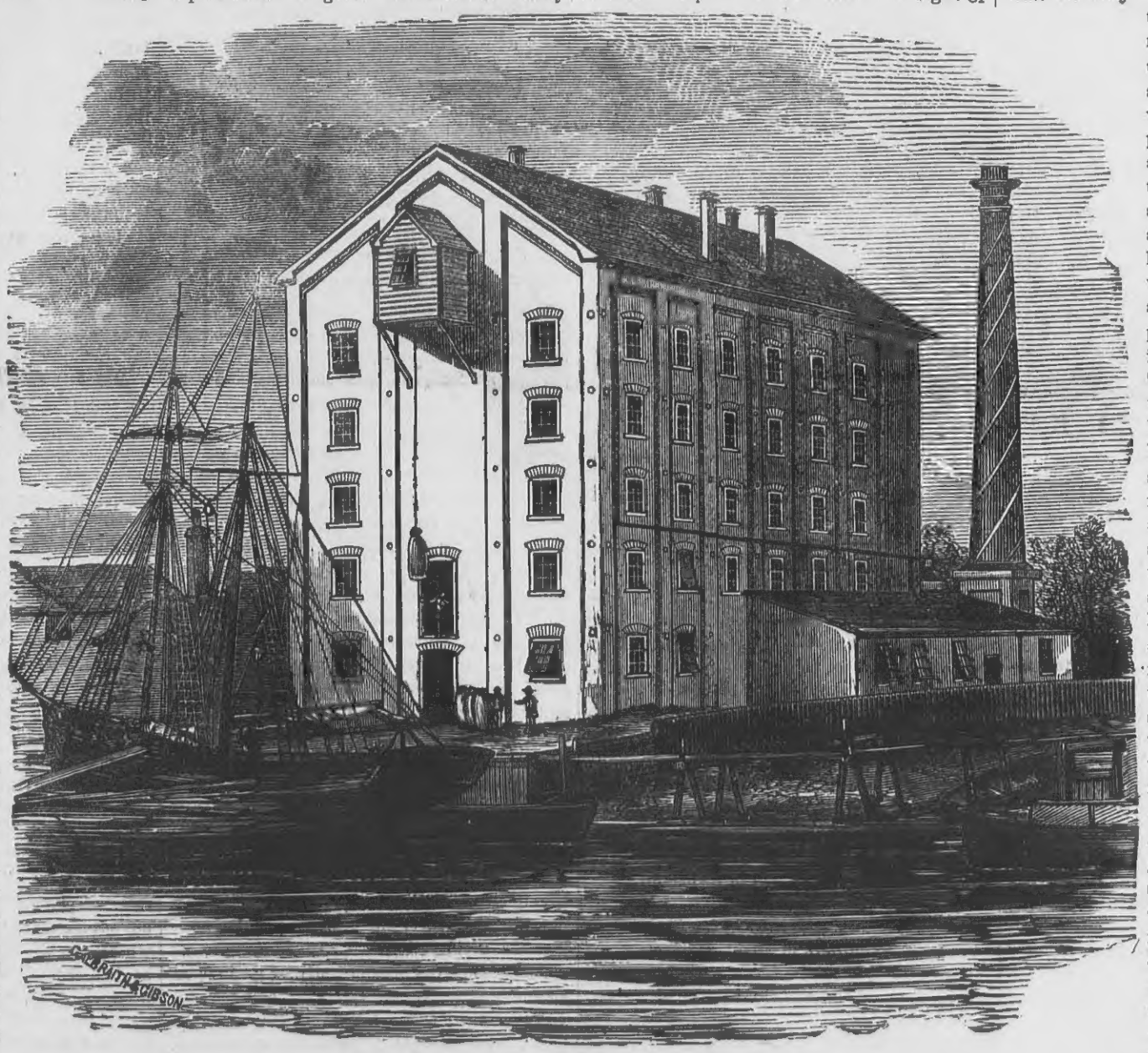
The United States MILLER

Volume 7.—No. 6. MILWAUKEE, OCTOBER, 1879. Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

British and Irish Flour Mills.

WAVENEY FLOUR MILLS, YARMOUTH.

We have frequently had occasion to contrast the mode of flour manufacture practiced in former times, before the revolutionary force of steam was introduced and the development of the mechanical contrivances for the treatment of grain to be converted into flour, and of the latter before being sent to the flour merchant or the baker—with the mode of manufacture now in use. The interior of our flour mills, more especially those of them in which the manufacture of the article is pursued on a large scale, have been almost revolutionized, while as regards their exteriors quite as marked a revolution has taken place. The old mills, when wind and water were the motive powers, judging from the relics of them which have escaped the ravages of time and the unsparing hand of improvement, were quaint and picturesque features of landscape, or townscape, which were attractive alike to poets, painters and musicians, as songs, pictures and musical compositions abundantly attest. In our last technical issue, a correspondent, Mr. George Allsop, referred, in a brief communication, to the favors that had been conferred on "Mills and Millers" by painters and poets. They are the old mills, and the old millers chiefly, who are thus enbalmed on canvas and in song. Who has not heard of the jolly miller who lived on the river Dee, who taught one of our ancient kings a few valuable lessons in the philosophy of common life? "The Lass o' Pattie's Mill" is equally well known; an old poet has sung "Merry may the maid be that marries the miller;" and all readers of Burns know the mercenary instincts of "Meg o' the Mill," who broke "the heart of her barley miller." One of the most beautiful of the earlier lyrics of the Poet Laureate has for its subject "The Miller's Daughter," and in the same poem the miller himself as well as the mill are touched off with a truly artistic hand. One of the most powerful of our living writers, George Elliot, has adopted a mill as the title of one of her most powerful works—we refer to "The Mill on the Floss,"—and in and around the miller and his family the main interest of the story is concentrated. Who ever entered a picture gallery, or an exhibition of pictures, without finding amongst its leading attractions landscapes in which a mill was a chief feature? In short, the mill of earlier times than the present is surrounded with a halo of poetry and romance; but our modern millers are more generally associated with economic questions, which, however intrinsically important, are as dry as the dust that floats in the atmosphere of their mills.



WAVENEY STEAM FLOUR MILLS, YARMOUTH.

Structurally speaking, the typical modern mill is a much more spacious and convenient affair than the typical ancient mill, loved by poets and painters. It is a building of many stories dominated by a towering chimney, frequently, as has been seen by the recent examples we have given of it in *The Miller*, of considerable architectural attractions, filled with an elaborate system of machinery. The Waveney Mill which we describe and illustrate in our present number belongs, we need not say, to the modern class of mills, and is a good specimen of its class. It occupies an excellent site for milling purposes near Yarmouth Bridge, by the side of the harbor of that ancient port, on the bar of which there are 16 feet of water at neap tides. Ships of seven or eight hundred tons burthen can come alongside the mill with grain cargoes, and smaller vessels and wherries have direct communication with the principal towns on the tributary streams, Bure, Yare and the Waveney,—viz., Norwich, Acle, Aylsham, North and South Walsham, Loddon, Mutford, Lowestoft, Beccles, Geldeston and Bungay. Our illustration of the mill is taken from the northwest, and it will be seen that although it has no pretentions to great architectural beauty the building has a highly effective appearance. The mill is eighty feet long by thirty-eight feet wide, sixty feet high, and comprises six stories. It was commenced in the summer of 1877, and is built of red brick, the floors being laid on wooden beams twelve inches square, which are supported by seventy-two massive iron pillars.

The engine, which is of the compound high and low pressure expansive and condensing class, is of horizontal construction, and of 80-horse power nominal, and is of ample strength and capacity for working up to 100 indicated horse power, with a steam pressure of 70 lbs. on the square inch. It was made by Messrs. Riches & Watts, and is of similar pattern to many constructed by the same makers, which are most successfully working at many of the largest flour mills and other establishments in the county of Norfolk. The steam cylinders are placed close together side by side, are both steam jacketed, as also are the covers, supplied by steam direct from the boiler. The diameter of the low pressure cylinder is 24 inches, and that of the high pressure cylinder 14 inches, and both have a length of stroke of 2 feet 6 inches, making 62 revolutions, or a piston speed of 310 per minute. There is a separate expansion valve working at the back of the train valve of the high pressure cylinder, arranged to be adjusted by hand in a very simple manner whilst the engine is running. The low pressure cylinder has but one valve; all are worked by separate excentrics, direct, so that each is susceptible of a separate adjustment, and being outside the cylinders at the sides of the engine, can at any time be most readily got at; the whole arrangement of the details of these engines having been most carefully studied with a view to this most important feature, viz., easy access to all parts in case of repair. This is often lost sight of in the endeavor to effect some fancied economy of detail. The guides to the piston rods are of the "slipper" kind, with adjustable shoes of hard cast iron fitted to gun metal blocks. These shoes, which are of large surface, work in cast iron channels accurately planed and fitted to the bed plate, and are provided with oil pans or dishes at each end for the effectual lubrication of the guides. The connecting rods are of the best forged Yorkshire iron, and are fitted at the crank end with heads of "marine" type forged with the rod, the caps of which are securely held by strong screw bolts and lock nuts. The crank shaft is also of the best forged Yorkshire iron, formed solid, and the iron slotted out; it is 6½ inches diameter in the neck and the main bearings, and is coupled to a short wrought iron shaft 7 inches in diameter, on a swelled part of which is keyed the fly-wheel. The other end of the crank is fitted with a cast iron disc crank (which is actuated by the high pressure piston), having a crank pin of cast steel. This disc is so formed as to accurately balance the weighty arms of the low pressure crank as well as the difference between the weights of the two connecting rods, so that a very uniform motion is the result. The fly-wheel is very heavy—a great advantage in flour mills—weighing seven tons, and is 14 feet in diameter; the periphery of the fly-wheel outrunning the periphery of the millstones by about 1,000 feet per minute. This fly-wheel is of greatly improved construction, and well calculated to resist its great momentum, the boss, arms and rim being in parts, the latter in six segments. The arms, being turned at their lower ends, are fitted into the boss, which is bored to receive them, by strong folding cutters; these, when all fixed, are put into a large wheel lathe and the upper ends of the arms carefully turned also. The segments of the rim having been accurately planed at their ends are then fitted to the arms by strong bolts and nuts; the whole rim is then turned and polished on face and edges, and a thoroughly good job is the result. The condensing apparatus, with air pump, is arranged at the back of the low pressure cylinder, and is worked by a gun metal rod in a line, vertically, from the low pressure piston, but about 8 inches below the piston rod. The air pump is double acting, all of gun metal, with its bucket and valve seats, guards, bolts, and nuts; to resist the action of the salt waters used for condensation, six valves are used for the suction and six also for the delivery, and the vacuum is, with a fair supply of water, most excellent. Steam is supplied from a "Galloway" boiler, 18 by 6 feet, and provision is left by the side of it for one of the same make, but 24 by 6 feet, when the engine will be able to run fifteen pairs of stones if needed, or a corresponding amount of other work. There are at present put to the engine twelve pairs of 4-feet stones arranged in two rows of six pairs each, worked right and left from off two drum pulleys on the end of fly wheel shaft projecting into the mill. These drums are each 7 feet diameter and 13 inches wide on face—well rounded driving on to drums —one to each lay shaft under the stones—6 feet 9 inches diameter and 13 inches wide on face. On the lay shafts (which are of wrought iron, turned and polished throughout) are bevel wheels, geared with wood and working into "heels" of iron teeth on the stone spindles. The hursts are strong cast iron standards, with brays and bridetrees all fitted by planing, metal to metal, the stones resting on pans of cast iron faced and turned and fitted to the turned ends of the standards and to each other, metal to metal, the whole arrangement being of a most rigid and substantial and rigid character and working exceedingly smoothly and satisfactorily; each pair of stones has a separate governor to regulate them. This arrangement of driving the stones has the merit of obtaining by its adoption large strap power, a better distribution of the strain from the engine shaft, and a minimum of vibration from the gearing; no upright shaft is used, as there is an additional pulley on the end of the crank shaft projecting into the mill, 6 feet diameter and 10½ inches

[Concluded on page 92.]

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.

Subscription Price..... $1 per year in advance
Foreign Subscription.....$1.50 per year in advance

All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.
Bills for advertising will be sent monthly unless otherwise agreed upon.

[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, OCTOBER, 1879.

WE are indebted to Messrs. Marshall Bros., of Milwaukee, Wis., for a number of late Australian newspapers.

COL. GRATIOT, of Platteville, Wis., called during the month. He reports orders lively for the well-known Gratiot heaters.

JONATHAN MILLS is heartily pleased with the final result of his milling experiments at Terre Haute, Ind. He is confident that there is "millions in it."

SUBSCRIBERS changing their location and writing to us to send the MILLER to their new address, will confer a favor by stating what their former address was.

ANOTHER member of the British Parliament—Hon. John Henry Puleston—is *en route* for this country to investigate the subject of agriculture in America in its relation to British interests.

THE aggregate internal revenue receipts of the United States, since June 30, from all sources, up to and including last week, show an increase of $72,000 over the corresponding period of last year.

MR. ALBERT HOPPIN, of the *Northwestern Miller*, Minneapolis, made a pleasant call during the month. Although the weather was rainy during most of his sojourn, he expressed himself as having well enjoyed his visit. Come again.

We will send a copy of the MILLERS' TEXT BOOK, by J. M'LEAN, of Glasgow, Scotland, and the UNITED STATES MILLER, for one year, to any address in the United States or Canada, for $1.25. Price of Text Book alone, 60 cents. Send cash or stamps.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

THE Kingdom of Greece, according to a recent census, has a population of 1,679,775, being an increase of 221,771 since 1870. The city of Athens has a population of 74,000. Since the liberation of Greece from Turkish rule in 1837, when her population was only 850,000, she has doubled her numbers.

CROPS in Italy, like those in England and other parts of Europe, are of a very low grade this year. The Italian Government has issued a circular to the Prefects of the various provinces directing them to call on property-owners for work for needy laborers. The wheat crop of Italy is estimated to be 15,000,000 bushels short of the average this season.

A JOINT COMMISSION, appointed by the Governor of New York and the Canadian Government, has commenced its session at Niagara Falls, for the purpose of devising means by which to prevent the destruction of the wondrous natural scenery there. How the action of the mighty forces of nature there at work may be arrested is not easy to conceive, but perhaps the commission may hit upon it. It has many times been proposed to turn this tremendous water-power to very extensive practical use.

THE Chicago *Inter-Ocean* says: "The question is, What are we to do with our gold? Nobody wants to take it, and yet the stream from Europe continues in a steady flow, $33,000,000 and over having been received since the first of August. Silver is also bothering us, though not to anything like the extent of gold; beside there is a demand for silver, and a great deal of it keeps in circulation, while gold is shunned by everybody. The probability is that the silver certificates that are being issued by the Government will soon have the effect of adding the entire silver coinage to the active circulation of the country, and this being so, a natural expansion of the currency will result." We would just say to the *Inter-Ocean* man that if he can't get rid of his gold any other way, he can come to Milwaukee and buy beer.

The Question Answered.

In the June number of this journal, in which was published the condensed statement furnished to the milling press of the receipts and expenditures of the Millers' National Association during the progress of the celebrated Cochrane suit, it appeared that George Harding, counsel for the Association, had received over $40,000. As there was no explanation furnished, many members throughout the country wrote to us inquiring if this fee was not a "leetle too high," as one of them put it. In order to answer the question, we addressed a note to Mr. Seamans, the Secretary of the National Association, to which we have received the following reply, which we think will be read with interest by millers generally:

MILWAUKEE, Wis., Sept. 30, 1879.—*Editor United States Miller*—DEAR SIR: In answer to your inquiry in relation to the apparently large amount of $40,000 paid Judge Harding in the Cochrane case, as per Executive Committee's published report, I beg leave to submit the following condensed list of expenses paid out of this sum by Mr. Harding, as per his report on file at my office. You will see by this account that the actual amount received by him thus far for professional services is less than $12,000, instead of $40,000, as you infer. I will also take the liberty of quoting the following extract from the letter received from him enclosing the annexed statement:

"I know that in traveling expenses, hotel bills, telegrams, etc., I have paid out between $2,000 and $2,500 more than this. I have labored at this case to the exclusion of the greater part of my other business for more than seventeen months. During that time, my office rent, organization, and expenses in New York and Philadelphia necessary to my business has been $6,000 or $7,000 a year. I congratulate the millers on their victory, but to me it has been a matter of honor rather than profit."

List of Expenses paid by Judge Harding in connection with the suit Consolidated M. P. Co. vs. Millers' National Association:

To amount paid for expert testimony and other witnesses	$13,781 34
To traveling and hotel expenses of Harding and other attorneys	2,025 23
To amount paid by Harding to assisting attorneys	3,311 00
To am't paid for printing testimony, press, etc.	4,511 54
To am't paid stenographers, taking testimony	711 00
To telegraph bills to date	234 15
To drawings and photographs of machinery for use in Court	266 50
To paid for purifier machinery, models, etc	923 88
To books and publications relating to purifying middlings	345 02
To investigations at the Patent Office	531 80
Incidental expenses, including items paid at N. Y. office, notary fees, Clerk of Court, etc	783 15
Total	$28,030,33

Yours respectfully,
F. B. MILLS, Asst. Sec'y.

Correspondence.

MANSFIELD, Ohio, Sept. 26, 1879.—*Editor United States Miller*—DEAR SIR: In compliance with your frequent request for persons interested in milling to contribute something for publication in your paper, I will say that, as the opportunity is presented, I will occasionally give my views on the subject of milling in its different departments, and in each article I shall endeavor to confine my remarks to some one special topic. And as the millstone is universally acknowledged as the basis or foundation of successful milling, it would seem to claim my attention in this article.

Uniformity of the blocks is a matter of great importance, and one which is overlooked by very many millers in making selection of millstones. Where one block is hard, another soft; one open, another close, it will be impossible to keep the burr in true face. And if the face of the stones are uneven, the result will be uneven granulation, poor quality of flour, and waste of product. As to the best style of dress, the opinions of our best practical millers differ widely. In my opinion, there are at least three different modes, either of which does well, viz., the three-quarter, the two-quarter, and the equalizing dress.

The three-quarter dress has the objection of too much draft in the short furrows, and makes it necessary to give the leading furrows less draft than they really should have, so as to prevent the product being thrown off too rapidly or from being delivered before being thoroughly granulated. The two-quarter dress is preferable, because there is less difference in the draft of the furrows, and consequently more uniformity in delivery.

I prefer the equalizing dress, because each furrow may extend nearly or quite to the eye of the stone, thereby securing greater uniformity to face, furrow and draft, and the result will be more perfect granulation. As to proper draft, width, number and depth of furrows, no fixed rule can be adhered to strictly, as size of burr, quality of stock, and kind of work to be done must be understood before direction can safely be given in a matter so important. The number furrows necessary in a millstone of any size depends upon the condition of the stone (whether open or close) and upon the kind of work to be done. Suppose I have a 48-inch best old stock French burr, medium close, which I wish to put in order for granulating wheat. I will first put this stone in perfect face, or as nearly so as possible. I will then lay off my furrows, say forty in number, of such width as to divide the surface equally between face and furrows, giving one a quarter inch draft per foot to the furrows, and making the depth at the eye one-fourth of an inch, and at the skirt one-eighth, taking the same care to have the furrow true, as I have taken to true the face, dressing it to a perfect feather edge, being careful to *avoid* leaving a shoulder, even of the very slightest depth, as it would have a tendency to cut the bran and make the flour impure. Having dressed the burrs as above indicated, I would place the bed-stone perfectly *level* on a *solid base*, and have the runners so perfectly balanced as to entirely avoid danger of the surfaces running together, except by carelessness of the operator. With the wheat in proper condition, I would expect to granulate thoroughly 6 to 7 bushels per hour, with my burrs running at a speed of 140 revolutions per minute. For granulating middlings I would use stones of same quality of stock as for wheat, but smaller, and very close, with less furrow surface.

For grinding corn and feed I would use 48-inch stones, built of the quality of edge blocks, quite open, using the equalizing dress with more furrows, narrower, and some deeper than for wheat, giving my furrows 1¼ inches draft per foot of the diameter, and run them at a speed of at least two hundred revolutions per minute. I consider the edge block burrs much more valuable for grinding corn and chop than those built in the ordinary way, for the reason that they require much less dressing, are naturally sharper, and grind more rapidly, requiring much less power to do a given amount of work.

Should Millers Speculate in Grain?

Whether the number of millers who are engaged in grain speculation is large or not, the thoughts advanced by the St. Louis *Miller*, in a recent editorial, are well worthy of consideration. It is certainly true, as that paper intimates, that the miller who speculates enjoys no immunity from criticism not possessed by the Wall street stock broker or any other gambler. A person, it says, should not pursue an outside policy to the general detriment of the trade to which he belongs. Now, pure and undefiled milling we believe to be inherently as safe and sure a business as there is in the country. True it has had a small margin of profits for some years past, but in that regard it has surely been upon a par with every other line. Other things being equal, if one miller can grind with a profit so can the mass of millers. *Per contra*, the mass of millers will not grind without a reasonable profit. Millers could approximate in advance very closely to the amount and character of their year's business were it not for the uncertain devices of one class of traders—grain speculators. The element of hazard would be very largely eliminated from milling were it not for the shifting values, the bulling and the bearing, the artificiality, the capriciousness and the capaciousness or immensity of grain speculation.

For a miller with a large outside capital to buy a vast amount of wheat on speculation, sell his flour as fast as he grinds it, until wheat has reached the desired figure, and then by throwing it upon the market help to create a tumble, he thenceforward hangs on to every barrel of flour he grinds until the market recovers from the revolution which he has aided to bring about—is right enough to himself, but wrong to the milling fraternity. The process unsettles values, and is necessarily detrimental to the general trade. It shakes the very foundation of the business, and lessens the stability and integrity of the otherwise sound superstructure.

Comparing the effects, loosening the cornerstone of his neighbor's mill would be no more demoralizing. It is proper and prudent for a miller, if he have the means, to store grain enough one harvest to run his mill until the next, if in his judgment prices and market prospects justify such a course. But when a man stores grain to the amount of ten, a hundred, or five hundred times the grinding capacity of his mills, he ceases to be a legitimate miller, for he has raised his hand against the regular business; and if the blow does not fall upon the mass of the fraternity, it is only because he has made a miscalculation, and instead of biting is bitten.

The extent to which this super-milling, this foreign annex, this exterior mill attachment is operated is not likely to be overestimated either by us or by any one who chooses to consider the matter. It is not confined to great cities. Many a town in a good wheat district has its speculative miller who helps to lock up the grain of the country and prevent a natural and equal distribution of milling profit. Some of the nicest, most honest and most reputable men, gentlemen of the strictest integrity and most public-sprited impulses, are continually engaged in this sort of speculation, but they are not regular millers, although they may grind a great deal of flour annually.

An Electric Railway.

THE LATEST USE TO WHICH ELECTRICITY HAS BEEN PUT.

Many attempts have been made to apply the motive power obtained from electricity to the working of locomotives, but no satisfactory result was obtained. However, a step forward has been made in this direction, in Berlin, with apparent success. There are two lines of rails laid down, which, as in a narrow guage line, return in themselves in a ring-shaped curve. The length is about 300 metres. In the middle is an isolated third line, consisting of an upright, continuous iron plate. The locomotive carries two rollers, with which it stands in connection with the isolated middle line. The essential portion of the locomotive is formed by an electro-dynamical machine, one pole of which connected with the middle line, and the other with the pair of outer rails, through the outer wheels. Similarly the machine which produces the current stands in the machine-room in connection through one pole with the middle line and through the other with the outer pair of rails. When, therefore, the dynamical machine in the locomotive is on the railway, the electric current produced in the machine soon runs through it and causes it to rotate and to impart its rotary motion to the wheels of the locomotive, and the latter continues to move until the current is interrupted. Even an imperfect state of isolation on the part of the rails does not materially affect the action of the machine. When the locomotive is moving, its conducting wires form much better conductors than the damp earth. If the current is interrupted the damp ground is not a sufficient conductor to keep the dynamo-electrical action going. The magnetism of the machines producing the current consequently disappears, and the result is that the subordinate stream through the earth is also interrupted. A great advantage is possessed by the transmission of electric force from the fact that the locomotive, whether moving slowly or quickly, always works up to its full power—an effect which has hitherto been an unsolved problem in mechanics. When the machine that gives the power has to do much work, and so goes slowly, the counter-currents it produces are also correspondingly weak, and the current through the conductors thereby undergoes an increase in strength to a similar extent. By this means the electro-magnetism, and, corresponding to this, the attractive power of the machine, are increased. The dynamo-electric locomotive has the further advantage that it carries in itself the power which can be employed as a brake, inasmuch as it becomes itself the primary or current-producing machine when it rotates more rapidly than the actual machine. In judging of the performances of the electric locomotive in the Berlin exhibition, it must be remembered that it was not constructed for the purpose to which it has been applied—that is, to propel the three elegant little passenger carriages which are attached to it. Each carriage holds from eighteen to twenty persons, and all three are drawn in from one to two minutes round the circular railway of 300 metres in length. The locomotive was originally made for the purpose of drawing up coals out of the pit. Nevertheless, its performances are very remarkable, and render it certain that there are many cases in which electric locomotives may be employed with advantage. The question of the extent to which electro-dynamic locomotives may possibly be employed is as yet difficult to decide. Apart from the question of the possibility of a sufficient isolation, it depends on the conductive resistance of the rails. According to Dr. Siemens' view, this requisite on long railways may be partly satisfied by setting up from time to time new primary dynamo-electric machines, which would maintain the necessary electric tension between the middle and the outer rails.—*Galignani's Messenger, Paris.*

The Old Miller.

BY W. N. DAVIDSON.

I knew an old miller in boyhood,
Who lived on the side of a hill,
In the sound of the falling waters,
And nigh by a clattering mill.

I remember the low ancient cottage,
The clustering ivy that clung
To the stately and olden linden
That over the gable hung.

A pathway led down through the garden
And out through a latticed gate,
That swung on its wooden hinges
With a sad and complaining grate.

And on through a little meadow,
Where cattle used to graze,
And a spring-brook used to babble
Through long, bright summer days,

Till it joined the highway to the village,
That ran at the foot of the hill;
And there stood the bourne of my travels—
The dingy and clattering mill.

How lofty it was, and so narrow!
The rafters how peaked and tall!
The angles so crooked and leaning,
Men said the old building would fall.

The miller but smiled at the warning,
And unto them, gaily, he said:
"My friends, the old mill will be standing
Long years when the miller is dead."

"Oh, give me the clash of the gearing,
The buzzing, and whirring, and jar
Of the stone," he would say, "I would rather
Have these than the wealth of the Czar.

Ah! well I remember the miller;
In fancy I see him to-night,
As I saw him in the days of my childhood,
His clothing all mottled with white.

And his musical accents are ringing
In memory's galleries still,
As away in the past I have heard them,
Above the loud clang of the mill.

Thrice Famine had spread his dark pinions
And Want brooded sore in the land,
And oft were the poor and the widow
Relieved with a bountiful hand.

For never, when hunger oppressed them,
And dreary and dark was the day,
Went they to the miller for succor
And came empty-handed away.

I remember the high and wide door-way,
The form that led up to the sill,
The hook and the ponderous cable
That hung from the top of the mill.

And the queer oaken doors as I saw them,
The upper one ever ajar;
I wondered with innocent wonder
What so many nails could be for!

One night when the river was swollen
And Thor was abroad on the blast,
Recording his journey in lightnings,
And bowing the woods as he passed.

The family up at the cottage
Were praying the God of the storm,
Whatever of ill should betide them,
To shelter the good miller's form.

But, oh! as their prayers were ascending
High up to the radiant Hill
Of Promise for aid and protection,
They heard the loud fall of the mill!

"The chastening hand of our Father
In wisdom is over us all!"
Cried the reverent dame; but its shadow
Lay over her soul as a pall.

The glorious eye of the morning
Looked down on the olden scene—
The cot, the brook, and the garden,
And meadow so quiet and green.

But where was the dingy old building,
So leaning, and narrow, and high,
With roof all so lofty and peaked,
It seemed to be piercing the sky?

Down under the wide-scattered ruins
The miller lay rigid and still.
And the heart that beat warm for his fellows
Was bloodless forever and chill!

They buried him nigh by his cottage—
His tomb could be seen from its door,
And graved on it: "Here lies a miller;
He never took toll from the poor!"

A TOOTHPICK AGITATION.—The toothpick market is agitated. Those chiefly in use are of white wood and pointed at both ends. A patent for fourteen years was obtained for them in 1866, and the factory of the Boston owners at Bucksfield, Me., used from 3,000 ta 5,000 cords of wood yearly, and turned out incalculable quantities. A box of 2,500 sold for 25 cents, and the profit was large. A log 6 feet long and about 18 inches in diameter was placed in a machine where bevel knives cut it each direction, and turned out the toothpicks ready for market. About eighteen months ago another Boston firm started a factory in the woods of Ohio and used similar machinery. The price then began tumbling, and fell to 20 cents at retail, then to 18, 14, and 12. Of late the original manufacturers have reduced the figure to 10 cents, or 8 cents at wholesale, and report their antagonists to be on the verge of stoppage.

The well known firm of Z. M. Davis & Co., of Canton, O., have lately made quite extensive improvements in their mill, putting in new middlings purifiers, and also changing their system of bolting so as to conform to the new process, and putting on new bolting cloth, furnished by C. F. Miller, of Mansfield, Ohio.

The Hungarian Milling Trade.

[By Leopold Brull, Director of the U. A. C. B., United Steam Mills, Buda-Pesth, translated from the *Oesterr. Ungar. Mueller Zeitung.*]

The flours made in Hungary by the high-class mills are only to a small extent disposed of to its inhabitants, the greater part being exported. To enable them to do this, they must be in a position to sell their products in the respective countries abroad at prices which will stand competition or the rates there current, and they are, therefore, forced to carry on business on a grand scale, and to have the rates of freight reduced to a minimum.

The main basis of the Hungarian milling is, therefore, the manufacture in vast quantities. The business flourishes as long as large quantities of wheat are available, and it ceases completely as soon as unfavorable commercial influences force the mills to reduce the scale on which they would otherwise work. Fortunately for the trade, all those conditions would nearly always exist in Hungary, which enable mills, by working on a large scale, to bring a considerable part of the raw product on the market in a manufactured state.

There are no reliable statistical data published of the quantity of wheat grown in Hungary, as is done in France, England, etc. It is therefore not possible for me to say in what proportion the manufacture of flour stands to the wheat and corn production of the country; nor has it ever been ascertained what quantity of flour the Hungarians are on an average able to produce annually. Approximately, it may be said, that the mills grind about thirty to thirty-five million cwts. of wheat and rye in the year, the products made therefrom being worth from 350 to 400 million florins.

The mills in the town of Buda-Pesth may be considered as equal in grinding capacity to one-sixth of the whole milling trade of Hungary. As previously mentioned, the home consumption is of little importance to the large Hungarian mills. If Hungary has a harvest which is at all favorable, but a small part of the flour made goes to satisfy home demands, while the greater part by far, particularly of fine and medium sorts of flour, is a surplus, and is exported. The farmer, in accordance with his general mode of living, buys none but inferior qualities of flour, a great part of the same being ground in the most primitive manner at the nearest water or other small mill, where he takes his wheat and gets a proportionate quantity of the low qualities of flour in exchange. The requirements of the larger districts and towns are also far too small to fully occupy the mills. Of fine flours the home consumption is very small; these qualities of flour, destined for fancy baking, are not adapted to the mode of living in our country, and their sale is restricted to foreign countries, particularly England.

With the prices of wheat at the figure at which they are at present, and have been since the last harvest, we are able to compete with the respective foreign manufactures, although on the various markets, particularly those of England, the millers have made astonishing progress in their powers of competition, although there are some obstacles already existing and some about springing up which may prove injurious to this branch of trade. Whether the import duties which Germany has in view will prove of continually extending influence to Austrian millers, is a question which necessarily remains undecided at present. But there can be no doubt that the price of the low kinds of flour formerly sent to Germany can bear the duty of two marks (2 ℳ) actually imposed with difficulty, and that generally the introduction of these duties will act unfavorably on our trade.

For the past two years Hungarian flour has been made exclusively from Hungarian wheat. Formerly, in years of bad harvest, important quantities of wheat were imported from Roumania for the manufacture of flour, but now the Hungarian wheat, which of all kinds in the world is the most suitable for our system of milling, is alone used, as it can be had in sufficiently large quantities.

The wheat used by our mills is grown in different parts of the Kingdom. The Theiss wheat is best conditioned and ranks highest for the manufacture of good flour. Next stand the Weissenburg and Pesth, as well as the Banate, Marose and Bacska wheats. Generally these kinds of wheat are used for the manufacture of flour in the following proportions:

Thirty-five per cent, Theiss wheats; 25 per cent, Banate and Marmarose; 25 per cent, Pesth and Weissenburg; 15 per cent, Bacska wheats.

The markets for Hungarian flour are: At home and Austria, Hungary, principally for low quality flour. Upper and Lower Austria, Bohemia, Moravia, etc., white flours of medium quality and bread flour. Abroad: Southern Germany, bread and low quality flours for brown bread. North Germany (Berlin), exclusively fine quality flour. Switzerland, Belgium, Holland, generally bread and low quality flours. France and Italy mostly import small quantities of various sorts. England, fine and medium sorts, sometimes also bread flours. Turkey and Greece, low qualities of flour. The Brazils, fine flour. Egypt, fine and medium flour. East Indies, fine quality flour. The export to England and Germany was greatest in 1878, and these countries are our two most important customers.

Formerly our flours were forwarded to England by way of Northern Germany and the North Sea. In consequence, however, of the well-known innovations in the German customs policy, and the raising of the railway freights which was connected therewith, the Hungarian mills were obliged to look out for another route of transport. They found it in the way by the Southern Railway to the Adriatic Sea, and thence from the port of Trieste, so also from Fiume to the United Kingdom.

Thus we have placed in safety this branch of the export trade, and if the parties concerned will now see that the railway freights to Trieste and Fiume respectively, are fixed at as low a figure as possible, and that the shipping between Fiume and England gets more regular and frequent, we may be assured that we need not be displaced in the English markets by American competition.

A new and more direct railway communication between Pesth and Fiume is proposed; it would make the latter the only port on the coast of the Adriatic Sea for exports from Hungary.

The duties recently imposed by Germany affect our home trade to some extent. Pretty large quantities of common wheat and rye flour are sent from Germany, chiefly from Saxony, to the north of Bohemia and Moravia, being very cheap, and, consequently, easy of sale. Now, in my opinion, an end should be made to this competition, for competition it is after all—by imposing, in our turn, a duty on this flour. We certainly need not now abstain from doing this in consideration of the interests of our German competitors.

How to Interpret Dreams.

Many great men have been superstitious. Dr. Johnson believed in ghosts, and, had he lived today, would have been a modern Spiritualist. The Cocklane ghost story was exploded, but Johnson believed it till the last. Napoleon was a fatalist, and believed that dreams gave reliable forecast of future events. The following are from his dream-book:

ALMS.—To dream that you deny, indicates want and misery to the dreamer; that you bestow, signifies joy and long life, either to the dreamer or some particular friend.

APPAREL.—To dream that your clothes are good, denotes prosperity and happiness; of white apparel, is good only for clergymen; to others it is a sign of trouble; to mechanics, decline of business; to the sick, death. If of black, however, it is of their recovery; of rich scarlet apparel, is good for rich men and servants, signifying honor, dignity, and liberty—but is death to the sick, and loss or captivity to the poor; to dream of women's apparel, is good for the unmarried—but to a married man, loss of his wife or sickness.

APPARITION.—If attired in white signifies deceit, and temptation to sin.

BARKING OF DOGS.—Detraction and insult.

BATHING.—In a clear fountain, joy; in stinking water, shame and false accusations.

BEARD.—To dream of a large beard is good for any of the learned professions, denoting eloquence and success; to a maid, an early marriage; to a married woman, widowhood; to a widow, second marriage; to a young child it is death; to a youth, promotion. Loss of beard denotes misfortunes.

BROTHERS.—To see the deceased, denotes long life; that you discourse with your brethren, vexation—for in dreams brethren denote enemies. Timocrates dreamed that he had buried his deceased brother, and soon after one of his greatest enemies died.

CARDS.—Playing at, deceit and craft, success in love and gambling.

CATTLE.—Fat, denote fruitfulness; lean, a scarcity.

CAT.—Denotes a thief; to fight a cat, affliction, sickness.

CHILD.—If a man dream he is with child, increase of riches, loss of a wife, sickness, revealing of secrets. To a maid, it denotes nuptials, joy, and reveling—yet sometimes grief and fear to the mother.

CHILDREN.—That many are born denotes joy and good success. To dream of your own children is a bad—but of other persons is a good—omen; better of boys than of girls.

COMBATS.—Shame, strife and contention.

COMBING.—Happy change of affairs.

DANCING.—Denotes good, and mirth to those in health; but death of the sick; to dance to music indecates activity and mirth, but without music denotes poverty.

DOGS.—Denote fidelity, affection and courage, if they are our own. Strange dogs imply enemies; that our clothes are torn by, slander. Greyhounds import actions and employments. Household dogs, farms and servants. Lap-dogs, delight and pastime. A mastiff, a potent enemy; the result of a fight with, denotes your success with opponents.

DEVIL.—To dream of, implies punishment, and is an ill dream; to see him, intends—to the healthful, melancholy and sickness—to the ill, death. To talk to him indicates temptation and treachery, despair, and ruin.

DRINKING.—Is a sign of sickness.

EARTHQUAKES.—Change of estate, injuries, death; to see a town destroyed by, famine, war, and desolation.

ECLIPSE OF THE MOON.—Death of a mother; of the sun, death of a father.

ENEMY.—To dream of, intimates caution.

FACE.—Of a fresh smiling face, friendship and joy; pale or meagre, trouble, poverty, and death; black face, long life; washing, repentance.

FALLING FROM HIGH PLACES.—Imports loss of station.

FIELDS.—Indicate an early marriage, attended with much happiness.

FIGHTING.—Denotes contention, and a wound by disgrace.

FLOODS.—Denote rigorous judges, angry masters, assemblies, and noise.

FLOWERS.—Pleasure and consolation. Yellow flowers denote obstruction. Red flowers, still greater: to wear them, short-lived joys; to gather them, mirth and jollity.

FORTUNE.—To dream of acquiring, is good to the poor, but bad to the rich.

FRIEND.—To see him dead, denotes joy; but to a lover, inconstancy.

FRUIT.—Signifies profit and gain.

FUNERAL.—Acquisition of an estate, marriage.

GIFT.—To bestow, loss and damage; to receive, joy and gladness.

GOLD.—On clothes, denotes joy and honor; a crown of favor and promotion; to gather, deceit and loss.

GRAIN.—To see and gather is profit and advantage; to eat, bad, except peas.

HAIL.—Sorrow and tribulation.

HAT.—To be torn or dirty, damage and dishonor. A new hat, profit, joy, and success

HATRED.—To dream of, indicates misfortunes.

HEAVEN.—To ascend into, grandeur and glory.

HELL.—To see, and hear of, denotes repentance, sorrow and melancholy.

HORSES.—To dream of a horse has ever been held to be a fortunate dream, one of a very happy omen, whether the horse is taken, mounted, or merely seen. A running horse indicates prosperity. Riding on a tired horse, failing in love.

KEYS.—To lose, denotes anger. A key is good to a lover, but bad to a traveler.

KILL.—That you kill a man, prosperity in business.

KISSING.—Denotes loss. To kiss a dead person, long life. That you are kissed by persons of quality, honor.

LICE.—To dream of having many, imports sickness; of destroying them, increased riches.

LIGHT.—To hold one in the hand, implies success in love, honor, and good will.

LIGHTNING.—Without a tempest, denotes change of place; to be smitten by, is good for the poor; it imports also marriage to the single.

LINEN.—To dream of washing, is loss to the rich, but profit to the poor.

LOOKING-GLASS.—To look into, denotes to the single, sweethearts; to the married, children.

MARRIAGE.—Denotes danger and death, damage, sickness, and melancholy.

MONEY.—Loss of, indicates to the old, death; to the young, immodesty and dishonesty.

MOTHER.—To see her alive, is joy; dead, is misfortune.

MUSIC.—Sweet, intends good news; discords, bad news. Mysterious music, unexpected happiness. The hymns and music of the angels, devotion and piety.

NAKEDNESS.—To see a man naked, fear and terror; a woman, honor and joy.

NAVIGATION.—To be sailing in smooth waters, indicates comfort and success; in rough waters, disappointment and trouble.

NIGHT-BIRDS.—Denotes misfortune and portends ill. Of this class are the owl and the bat.

OIL.—Is good fortune to women; to men, shame.

ORCHARDS.—Pleasures, riches, and plenty.

ORGANS.—The sound of, joy.

PAPER.—To write on, news; to blot, or tear, regularity in business.

PEACOCK.—Implies a fortunate marriage.

PERFUMES.—That you are perfumed, vanity and deceit.

PICTURES.—Joy, without profit.

POND.—The love of a beautiful woman.

PRAYERS.—Imply happiness.

PRECIPICES.—Injury and danger; loss by fire.

PURSE.—To lose, is a good and auspicious dream.

RIDE.—With men, is profit; with women, deceit and trouble; in a coach, pride.

SAIL.—To, is a good dream; it denotes prosperity, especially if at sea.

SEA.—Denotes good to travelers and servants.

SEAT.—To fall from, disgrace.

SLIPPERS.—To the rich, decay and poverty.

SMALL-POX.—Profit and wealth.

SNAKE.—A cowardly enemy.

SWEETHEART.—If she look fair, that she is constant; if pale, that she has broken her faith.

SWEETMEATS.—Token of being invited to a feast.

THEFT.—To dream of having committed, implies danger.

THIEVES.—To dream of driving them away, is a good dream; to be robbed by, portends mischief.

THIRST.—and quenching it, portends jollity.

THUNDER.—Is affliction to the rich; joy to the poor.

TRAGEDY.—To see a, loss, grief and sorrow.

TRAVELING.—In a wood, misfortunes; over hills, advancement.

TREASURE.—To find hidden, imports evil.

VELVET.—Profit and joy.

VIOLIN.—Concord and good news.

WALKING.—In the dirt, sickness; in the water, grief; in the night, adversity.

WASHING.—Riches; that you bathe, prosperity; that you swim, danger and sickness.

WEDDINGS.—Denote death.

WEEPING.—Denotes joy and mirth.

WELL.—To draw water from, marriage.

WIFE.—That she is married to another, signifieth change of affairs.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE, 62 GRAND OPERA HOUSE, MILWAUKEE, WIS.

Subscription Price..... $1 per year in advance
Foreign Subscription.....$1.50 per year in advance

MILWAUKEE, OCTOBER, 1879.

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R. L. DOWNTON, of the firm of Downton & Miller, St. Louis, Mo., is now at Langham's Hotel, London, England.

WE have received the first number of the *Chromatic Art Magazine*, published by John Henry, 9 Spruce street, New York. It is one of the most beautiful specimens of typography we ever saw, and practical printers know how to appreciate it.

☞ THE UNITED STATES MILLER *has the largest circulation of any milling journal published in America, and was the first milling journal started in America entirely independent of connection of interest with some machine or mill-furnishing establishment.*

WE call the attention of our readers to the advertisement of Lehmann's method of staffing millstones and Lehmann's patent bosom staff in another column. Where he has introduced his inventions they have given unqualified satisfaction, and many of the leading mills are now using them. When a miller once becomes acquainted with his inventions, he will not do without them.

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NORDENSKJOLD, the Swedish Arctic explorer, has succeeded in making the passage through the Arctic Ocean from the Atlantic to the Pacific, and has arrived at Yokohama, Japan. He sailed from Norway in July, 1878, and was detained by the ice at East Cape for 264 days. Scientists are anxious to learn the result of his explorations. Commercially, this northern passage can never be of use.

WE have been requested in some half dozen letters during the past month (principally by Western subscribers) to quote mining news. To these we would say it is entirely out of our line of business, and we do not pretend to be authority on the subject. We would advise our inquiring friends to send for a sample copy of the *Chicago Mining Review*. It will probably answer all the questions propounded to us.

THE WESTERN CORN CROP.—The Western corn crop of 1879 is immense. The acreage in the States of Illinois, Missouri, Kansas, Nebraska, Iowa, Wisconsin and Minnesota is 23,000,000 acres, which, at the estimated yield of 40 bushels per acre, will produce 920,000,000 bushels. The crop in those States last year aggregated 700,000,000 bushels. The increase is not less than 200,000,000 bushels this year, an amount nearly equal to all the surplus wheat crop of the United States. This increase in the corn crop is an essential element in the produce trade of the country. It tends to keep the price of wheat steady, or to increase the supply of cattle and hogs. If fed to stock and swine it will insure a large increase and low prices; if shipped it will give such cheap food to starving Europe as to prevent famine prices on wheat.

THE SLOW MOVEMENT OF THE WHEAT CROP.—The lowest estimate for the European demand for American wheat for the coming cereal year 1879-1880, is 200,000,000 bushels, which, it is generally believed, the late bountiful harvest, will be abundantly able to supply. The wheat will, of course, become first visible at a few great primary centres. Seven-eighths of the surplus will pass through the cities of San Francisco, St. Louis, Chicago and Milwaukee. To insure the European consumption of its immense requirements, average daily receipts and shipments at these four primary wheat markets of 750,000 bus. are necessary. As up to the present time the aggregate receipts and shipments have been not quite 300,000 bushels, the average amount now required is nearly 800,000 bushels per day. The movement of new wheat, thus far, has been entirely inadequate to fill the prospective demand, and accumulations are smaller than usual. It has, however, been sufficient to supply all immediate demands on foreign account.

ANOTHER COURT DECISION AGAINST SHORT-SELLERS.—A suit was brought before the Philadelphia Court of Common Pleas by John J. Thomas, a stock broker, to recover from the executor of John B Dixon for cash advanced during the lifetime of the latter for the purpose of "selling short" in stocks. On the trial of the case in November last, the jury found a verdict in favor of the plaintiff for $3,938 86. The case was carried before the full bench by the defendant's counsel, who argued that the plaintiff could not recover, as the contract was in law a "gambling contract." Judge Thayer sustains the claims of the defendant, and grants a new trial, upon the ground that the recent decision of the Supreme Court in the case of Fareira vs. Gobell is conclusive upon the point that where a broker, employed to effect wagering contracts on the prices of stocks, advances his own money at the request of a defendant to settle differences in stocks, the broker in such cases cannot recover from the defendant the amount advanced for such a purpose.

A WARNING TO WHEAT EXPORTERS.—We clip the following paragraph from the *Corn Trade Journal* of London, England, to which we would call the attention of wheat shippers:

"A miller, a native of England, writing to the *Mark Lane Express* from Indiana, U. S., warns buyers of American cargoes about the condition of the same. He says that large quantities of wheat, perhaps millions of bushels, are threshed out when quite damp, and taken by shippers without the slightest scrutiny or objection. This grain goes eastward quickly, and is at once, doubtless, shipped from New York, reaching Europe in a state unfit for human food, the object being simply to fill old contracts. The moral of this appears to be—purchase only on sample, except from well known shippers.

This is the first complaint we have heard on this subject in a long time. We scarcely believe it; but if it is true even occasionally, it is to be regretted. Wheat should be in a thoroughly dry condition when shipped. Grain driers of any capacity can be procured, and, if the wheat is in the least moist, it should be put in proper condition before shipment. Let no fault of ours damage our growing trade.

Bringing iron to Pennsylvania seems a proceeding as superfluous as carrying coals to Newcastle, but it is being largely done. Forty-five thousand tons of Bessemer pig have been ordered from England, and heavy shipments from Africa are announced. This makes another among the many signs of the business revival which is following in the wake of resumption.

A School for Millers.

The above subject has been before the millers of this country for a long time, and the idea has met with general approval, but as yet nothing tangible has been done. It is about time that the matter was practically taken up and a fund raised, a location selected, teachers employed, and the work of instruction prosecuted. A successful school for millers has been in operation in Germany for some years and is self-supporting. If a school of the kind was established in this country, it would have no lack of patronage. Millowners who have sons that they wish prepared to succeed them in business would not hesitate to pay a liberal sum for the purpose of proper theoretical and practical instruction. Mr. Frank Chamberlain, of Albany, N. Y., has taken a sincere interest in the project, and we hope he will continue his work until a Millers' School is in actual operation. We have no doubt if a subscription paper was started out by Mr. Chamberlain (the Chairman of the Committee on the Millers' College of the Millers' National Association), but what it would meet with numerous liberal subscriptions,—enough to give the enterprise a fair start. We shall be pleased to hear from our readers on this subject.

Dakota Territory—Facts in Relation to Its Early History.

The Winona *Republican* publishes the following letter from Judge Flandrau, which contains some interesting historical reminiscences of the Territory of Dakota, the most of which will be new and interesting to the general reader:

Dear Sir: In response to your letter of August 15, 1879, asking me for information concerning the origin and early history of the town of Flandrau, in Dakota Territory, I am glad to say that I am in possession of the facts you seek to know, and that I give them to you with pleasure, because there seems to be a good deal of misapprehension among the people of that place as to its origin. Being somewhat of an "old settler," I take great interest in all that concerns the history of this portion of the Northwest, and like to see the facts correctly stated. It happened thus:

In the early part of the year 1857 we all felt pretty sure that the State of Minnesota would be admitted into the Union upon what we then called the "North and South" line of division, which was the line finally adopted. There was a strong party in favor of a State upon an East and West line of division, which would, if adopted, have cut the Territory in two, on a line just north of Minneapolis, making the State out of the south portion, and leaving the Territory or remnant north of that line.

You will remember that when Wisconsin was admitted on the western boundary of the St. Croix, it left all the country west of that river in an unorganized condition, and that the inhabitants held a convention and elected Gen. H. H. Sibley as a delegate to Congress as an experiment, and that he was admitted to a seat, and the act of Congress of 1849 was soon after passed, organizing the Territory of Minnesota. We anticipated just such a condition of things on the admission of Minnesota, and concluded we would occupy the Territory west of the new State, send a delegate to Congress, secure the capitol, university, penitentiary and other public buildings at our own towns, and make a good speculation out of the enterprise. To enable us to accomplish this a corporation was organized under an act of the Legislature of the Territory of Minnesota, passed May 23, 1857, which was entitled "An act to incorporate the Dakota Land Company." The original incorporators were, W. H. Nobles, J. R. Brown, A. G. Fuller, S. A. Medary, Samuel C. Brown, James Lynd, N. R. Brown, F. J. DeWitt and Friedenrich. The corporation was vested with full powers for the purchase and entry of land, and the doing of anything that was necessary to establish towns and cities anywhere in the Territory or future State.

Under this organization agents were sent into the Southwest and the sites for several cities selected, among which were Sioux Falls city, Medary and Flandrau, all on the Big Sioux. Sioux Falls was designed for the capital of the future Territory, and the other places were to share the governmental prizes. Mr. A. G. Fuller was elected a delegate to Congress, and went to Washington, but was never admitted to a seat, notwithstanding the precedent of General Sibley's admission in 1848 from Minnesota. Sioux scrip was laid upon lands, but at a subsequent date was withdrawn. Very considerable improvements were made by the company at all the places, but especially at Sioux Falls city, where a capitol building was erected, a hotel built, and a printing office established, with Sam Albight as editor, and a very handsome newspaper was published there, called the Dakota *Democrat*, of which I now have a copy of the issue of August 5th, 1879, being Vol. I, No. 2, of the paper.

The efforts of Mr. Fuller in Washington, and other friends of the organization, failed to procure a Territorial Government for Dakota for several years, and my opinion has always been that the delay was on account of all the members of the Dakota Land Company being Democrats, and Congress expecting a change of administration in 1860, destined to postpone the erection of the Territorial Government until the other party could control it. At any rate they did postpone it until March 2, 1861, when the act was passed organizing Dakota Territory and leaving the selection of the seat of Government to the Governor.

During this delay, however, a serious state of things existed. The people of the Territory, becoming impatient at the delay, organized a State Government, elected first Henry Masters and then Sam Albight, Governor, chose a Legislature, which assembled at Sioux Falls and passed laws which were duly printed and approved by Gov. Albight, and demanded admission to the Union "on an equal footing with the original States;" but Congress was inexorable, and all the time and money spent by the company and others in this direction were lost.

When the Sioux outbreak occurred in August, 1862, all the improvements at Sioux Falls, Flandrau and Medary were burned by the Indians, and the places were virtually abandoned by the company. The United States Government made reparation to the company for its losses, which enabled it to make its first and only dividend on its capital stock.

This is briefly the history of the town of Flandrau, up to the time when its present title was made by new comers, and about which I know very little. Sioux Falls city, as its name indicates, was called after the fall in the Big Sioux, at which place it is located. Medary is named after Governor Samuel Medary, who was then Governor of the Territory of Minnesota, and the Dakota Land Company did me the honor to name the town of Flandrau after me.

The facts given you are largely from recollection, but they are substantially correct in all essential particulars. I would suggest, however, that Mr. Alpheus G. Fuller, who now resides at or near Yankton; Mr. F. G. DeWitt, who, I believe, also resides in Yankton, or somewhere on the Missouri, in the territory; Captain Fisk, who is now in Pembina; and Daniel F. Browley, who, I believe, resides in Winnepeg; all were intimately connected with the operations of the Dakota land company, and can undoubtedly give you accurate information as to the history of the town of Flandrau, and being old settlers, they will willingly recount the experiences of the past. Respectfully yours, CHAS. E. FLANDRAU.

In practice 100 pounds of flour will make from 133 to 137 pounds of bread, a good average being 136 pounds; hence a barrel of 196 pounds should yield 266 one-pound loaves.

A SCIENTIFIC BIBLE.—An English religious paper says: The preparation of the new Bible has not made much advance yet. We lay before our readers the improved version of the first chapter of Genesis: 1. There never was a beginning. 2. And Cosmos was homogeneous and undifferentiated, and somehow or another evolution began and molecules appeared. 3. And molecule evolved protoplasm, and rhythmic thrills arose, and then there was light. 4. And a spirit of energy was developed, and formed the plastic cell whence arose the primordial germ. 5. And the primordial germ became protogene, and protogene somehow shaped eozoon; then was the dawn of life. 6. And the herb yielding seed and the fruit-tree yielding fruit after its own kind, whose seed is in itself, developed according to its own fancy. 7. The cattle after his kind, beast of the earth after his kind, and every creeping thing became evolved by heterogeneous segregation and concomitant dissipation of motion. 8. So that, by survival of the fittest, there evolved the simiads from the jelly-fish, and the simiads differentiated themselves into the anthropomorphic primordial types. 9. And in due time one lost his tail and became man, and behold he was the most cunning of all animals. 10. And in process of time, by natural selection and survival of the fittest, Mathew Arnold, Herbert Spencer and Charlee Darwin appeared, and behold it was very good.

HOW OLD IS GLASS?—The oldest specimens of pure glass bearing anything like a date is a little molded hon's head, bearing the name of an Egyptian king of the eleventh dynasty, in the Slade collection at the British Museum. That is to say, at a period which may be moderately placed as more than 2,000 years B. C., glass was not only made, but made with a skill which shows that the art was nothing new. The invention of glazing pottery with a film or varnish of glass is so old that among the fragments which bear inscriptions of the early Egyptian monarchy are beads possibly of the first dynasty. Of later glass there are numerous examples, such as a bead found at Thebes, which has the name of Queen Hutasoo or Hashep, of the eighteenth dynasty. Of the same period are vases and goblets and many fragments. It can not be doubted that the story prepared by Pliny, which assigns the credit of the invention to the Phœnicians, is so far true that these adventurous merchants brought specimens to other countries from Egypt. Dr. Schliemann found disks of glass in excavations at Mycenæ, though Homer does not mention it as a substance known to him. That the modern art of a glass-blower was known long before is certain from representations among the pictures on the walls of a tomb at Beni Hassan, of the twelfth Egyptian dynasty, but a much older picture, which propably represented the same manufacture, is among the half-obliterated scenes in the chamber of the tomb of Thy, at Sakkara, and dates from the time of the fifth dynasty, a time so remote that it is not possible, in spite of the assiduous researches of many Egyptologers, to give it a date in years.—*The Saturday Review.*

GRAIN.

Peculiarities in its Normal and Manufactured State.

An Investigation Under the Microscope—Showing the Adulterations and Natural Evils to which It has been Subjected.

A COMPLETE INVESTIGATION OF THE SUBJECT BY ONE OF THE LEADING CHEMISTS OF EUROPE.

Flour in General—Wheat Flour—Rye Flour—Barley Meal—Oat Meal—Indian Corn—Rice Meal.

[Translated from the German of Dr. Herman Klencke expressly for the UNITED STATES MILLER,—cuts reproduced by our special engraver from the original.]

[*Continued from September number.*]

According to Robine, the flour which is to be examined is grated for five minutes in a mortar of porcelain (16 g. of it for instance) together with 16 g. of pulverized sandstone, and then gradually and in small portion 1-16 L* of water is added. Then the liquid is filtered. If it has been obtained from flour which has been adulterated with the flour of white beans, it will pass through the filter more slowly and always remain turbid. If 1-32 L of iodine water is now added, the liquid will become of a rosy reddish color if the flour is pure, and will only appear somewhat darker when the flour has been made of other grain than wheat, or when this had been reaped during a wet season; but if the liquid becomes flesh-colored, more or less deep, and if this color disappears quickly, it contains bean-meal. By the same treatment pure bean-meal will give a slate-color. But it is not necessary to be as circumstantial as Robine; one may simply dissolve 8 g. of the suspected flour with 1-32 L of water in a glass until it is no longer lumpy, and then add 1-32 L of iodine water, and the same result will be obtained. Several chemists have tried to determine the presence of legumine, that is, the peculiar nitrous component of legumes, which is very similar to caseume and which as nutritious matter supplies the gluten in them, so as thereby to prove the presence of the flour of legumes. But these modes of examination are too difficult for men who are not professional chemists, and still are no decisive test when practically applied for the discovery of adulterations. But in order to state how legumine may be found, we will describe the mode of of treatment recommended by Lemenant des Chenais, a mode of proceeding which is in fact only a modification of the method of Martens. To wit: A dough is made of the suspected flour and some tepid water which is thoroughly kneaded over a hair seive beneath a fine jet of water, gradually applied, just as is done when the gluten is to be separated from the flour. In this case, too, a similar mass will remain on the seive while the liquid filters through. The liquid thus obtained is now treated with ammonia, which is an excellent means of dissolving the legumine. The liquid is left untouched for some time until the starch is separated from it, and is then filtered. Into the filtrated liquid a very diluted numeral acid is poured, which will cause the legumine to precipitate if there is any flour or legumine present. This legumine is collected on a filter that has been previously weighed; it is then dried and weighed, while on the filter and the weight of the latter is substracted from the entire weight; the remainder will be the weight of the legumine. To discover the bean and vetch-meal (of Vicia sativa, the flour obtained from which is often mixed with grain flour) the method of examination recommended by *Donne*, but improved and simplified by Martens, may be applied, namely: An alcoholic extract is prepared of the suspected flour, this is poured in a thin layer on the surface of a small porcelain plate, heated to 100° C., and then exposed for one or two minutes, first to the vapors of concentrated nitric acid, and then to ammonia; if there is any bean or vetch-meal present, the mass will become of a very fine red color. The method of *Donne*, applied for the same purpose, is based upon the experience that the vapors of nitric acid and subsequently of ammonia give to bean and vetch-meal a beautiful bright red color. A mixture of both will consequently show more or less bright red spots tn the yellewish mass. This experiment is very striking and reliable and since it enables us, with a little practice, to detect an admixture of but 4 per cent of the flour legumes in the grain-flour without difficulty. We will here let the method follow for those fond of chemical experiments. From one to two grains of the flour which are to be examined are taken, spread over the sides of a small porcelain plate, which had been previously moistened with a little water. Care must be taken, however, that the flour is not put upon the bottom of the plate, for into it is put a little nitric acid, which dare not come in contact with the flour. The plate is now covered with a glass plate, and is slowly heated over a spirit lamp, but so that the acid does not begin to boil. The nitric acid evaporating in this way will now begin to color the flour spread over the sides of the plate; it will become yellowish and turn darker the nearer it is to the acid, while higher up on the rim of the plate it will remain lighter. This process is discontinued while the flour on the rim is still white; then the acid is carefully removed from the bottom of the dish, which is best done by absorbing it with blotting paper, and in its place some ammonia is poured, the glass plate is then again put over it and now the vapors of ammonia are allowed to act upon it. It will soon be observed that in the middle of the sides of the dish a beautiful red color is appearing, especially in places where the nitric acid had acted neither too strong nor too feebly on it. The red color indicates the presence of bean or vetch-meal. It is to be remembered, however, that pure wheat-flour will assume the same orange-red color when the nitric acid is over-heated. A very simple process to detect bean-meal among grain-flour is founded on the presence of tannin in the husks of beans and the absence of it in grain: About three to four drops of a solution of sulphate of iron are put into a saucer of porcelain, a small quantity of flour is dissolved therein by stirring it with a glass tube, so that a thick mass will be formed thereof, to which, if necessary, a drop of distilled water may be added, so as to make it less tenacious. It is then noticed whether a particular color will show itself on the dull white porcelain. Pure grain-flour will become of a delicate straw-color, flour of phasels or French beans, an orange-yellow, and flour of white beans, a delicate bottle-green color. The latter will even be discernable when only 10-16 per cent of the flour of white beans are present in the grain-flour. Wheat-flour imported from the Caucasus and brought into commerce under the name of "Cubanca," and which is principally in demand in France, always has a considerable admixture of the flour of white beans. By the same method by which Villain taught us how to judge the quality of the grain-flour and its adulteration with potato-starch from the nature of the gluten, as has been stated above, he was capable of finding the different adulterations of the flour of legumes. From a mixure of wheat-flour and peas-meal the gluten may be easily separated in the well-known manner, but the dough made thereof has a greenish coloor, and a peculiar taste and smell, the same as the water used for washing out the gluten. Even when only 3 per cent of the peas-meal has been added, the greenish color appeared, which, when the gluten becomes dry, will be even more marked. If there is any flour of phasels or French beans among the wheat-flour, the gluten can only be extracted with difficulty, and very often disappears entirely; the mass feels slippery in the hands, but when dried become of a light yellow color. A mixture of wheat-flour and lentil-flour forms a residuum of gluten which will leave a yellowish-brown bran on the hair-sieve, the gluten separates easily and when dried will also become of a yellowish-brown color.

*Litre.

[*To be continued.*]

Prevention of Fire and Explosion in Flour Mills.

One of the most destructive explosions and conflagrations that ever occurred to the manufacturing industries in this country, was the result of an explosion of mill dust in a large flouring mill. The destruction of several Minneapolis mills, one of them being the largest flouring mill in America, is still fresh in the minds of our readers. Previous to that and since, there has been several smaller and less destructive explosions, in each case involving the total destruction of the mills in which they occurred. These dust explosions have formed the subject of several elaborate papers read before Millers' Conventions in this country, as well as others published in milling and scientific journals, but we are not aware that any definite practical plan has been adopted by our millers, for the prevention of explosion. We have hitherto referred to this matter and given the methods of prevention suggested by several eminent scientists and practical millers. We find in an English scientific and industrial exchange the following account of a recent and valuable invention by Mr. W. Swain, of Newport-Pratt, Ireland, designed to prevent or diminish the destructive effects of fire and explosions in mills, and at the same time to purify the air, so that the health of persons employed therein may not be endangered, as it is when the hot air, dust, and floating particles of flour are allowed to remain. It is stated, that

"In order to carry this invention into practice, there is constructed at any convenient place outside the mill, a shed or similar building—or if desirable, more than one such shed—of suitable size according to the size of the mill in connection with which it is to be employed. This shed should be constructed of non-inflammable materials, such as bricks, or of wood or other substance rendered inflammable by the application of a coating of asbestos or the like, and its walls should be made as thin and slight as is consistent with sufficient strength to support the roof and stand firmly, for the reason that if it should be destroyed by fire the loss would be insignificant. In the case of mills not provided with ground space outside the same, piles or pillars of a suitable height from the ground may be employed, upon which the shed may be supported. The latter may, in some cases, be placed on piles or pillars above the roof of the mill, or in any place which may be found most convenient for any particular mill to which the present arrangement may be applied The separate shed or building may be situated at a considerable distance from the mill if more convenient in any particular case; a suitable air-passage flue being provided to connect the mill with the shed, which passage or flue may be entirely underground if desired. It is better for this outside structure to be placed at as low a level as is practicable, and for the passages or other connections leading form the mill to the shed, to incline at an angle downward from the mill. Pipes or tubes lead from the stones, and from any part of the mill or apparatus therein where heated air and dust are most likely to accumulate—such, for instance, as the middlings purifiers, and elevators. These pipes should be carried to the wall, and out through the same by the nearest practicable route; and they may all be either continued direct to the outside shed separately, or may be made to unite in one larger tube or shute leading to the shed. It is better that the tube in connection with the elevators should be placed on that side of the latter which carries up the meal, flour, or grain. By thus carrying off the current, the upward draught which travels along most elevators—and which in the case of fire assist combustion—is counteracted, and a downward current is created, which is led by the pipes or tubes to the outside of the mill. If desirable, these pipes or tubes may be provided with suitable check-valves to prevent any chance of fire being communicated to the mill along the tubes—in the event of an explosion taking place in the outside structure- In some cases a valve or valves are provided in the pipe or pipes outside the mill to admit fresh air therein, which may mingle with the air or dust going to the shed, thus rendering the mixture of air and dust from the mill less dangerous. Within the outer building a cylinder or drum is fixed, to which the pipes coming from the mill lead. This cylinder is constructed with a covering of some suitable material, for the purpose of arresting the particles of dust, whilst the air can pass through the same. This covering may consist of wire-gauze underneath flannel, serge or similar material; or, if desirable, the latter only may be used. The air cannot enter the cylinder except through the said covering, the ends of the cylinder being provided with air partitions or leather curtains, which prevent the air from entering at those parts. At a suitable distance beyond the cylinder, a suction or exhaust fan is placed, by means of which the air, dust, etc., are drawn or exhausted from the mill along the channels provided for that purpose. The fan and cylinder may be operated in any suitable manner, by means of a strap or band leading from the mill, and driven by the steam or other motor used in the mill; or by a separate motor provided for the purpose. The fan having been put in motion, a strong draught is created in all the pipes or tubes, which draught collects and draws with it the air, dust and other light floating particles within its reach, and conveys them to the outer circumference of the cylinder. The dust and other floating particles are here obstructed, whilst the air—freed from the same—is drawn into the cylinder, whence it goes on to the fan, and is blown out or discharged into the atmosphere outside the shed. The cylinder or drum is caused to rotate slowly; and at one or more parts of its periphery a brush or leather flap—or both—are provided for the purpose of ensuring the falling of the dust or other matters which may collect on the surface of the cylinder. These brushes may be caused to rotate, or may be stationery. Any ordinary fan suitable for the purpose may be used, but care should be taken that it is large enough, and that it is not driven at too high a speed. Although it is very advantageous to cause the heated air to be filtered or separated from the dust and other light matters before it reaches the fan, if desireable in any particular case, and said filteration or separation may be effected afterwards as usually practiced, but by means of the cylinder above described. It may sometimes be necessary to provide more than one cylinder and more than one fan for each mill, and these may be placed in the same or in separate sheds; and sometimes an intermediate fan or exhauster may be employed at some part of the pipe leading from the mill in order to create a stronger draught. The cylinder above described may be used with advantage, even within a mill, for separating the air and dust, in place of the woolen-covered frames above named. In order to provide additional security against fire and explosion in flour and other mill, the same are best illuminated (when working at night, or at any time when artificial light is necessary) from the outside, by means of lamps placed outside the windows. These may be gas, paraffin or other lamps and should be furnished with powerful reflectors, to reflect the light to the interior of the mill; or the electric light may be advantageously employed for such exterior lighting. Footways or balconies may be erected outside the mill, extending partly or the whole way around the latter, by means of which an attendant may walk round the exterior of the mill walls, for the purpose of inspecting the pipes, etc., and of lighting and attending to the lamps or other lighting apparatus. By means of the arrangements we have described, the danger of fire and explosion from the cause above mentioned is reduced to a minimum; and in case a fire should occur, it would not be nearly so destructive in its effects as such fires now are as it would in all probability be confined to the outer shed or building, which could be readily replaced without a large cost."

Petroleum for Fuel.

A part from the local use of petroleum for lighting purposes, and its exportation for a similar use, comes its application to steam navigation. With the old-fashioned boilers in use, with a central running opening longitudinally, no modification is necessary for the application of the new fuel. A reservoir containing some hundred pounds weight of the refuse (astalka) is furnished with a small tube, bearing another at its extremity a few inches long and at right angles with the conduit. From this latter it trickles slowly. Close by is the mouth of another tube, connected with the boiler. A pan containing tow or wood saturated with astalki is first introduced to heat the water, and once the slightest steam pressure is produced a jet of vapor is thrown upon the dropping bituminous fluid, which is thus converted into spray. A light is applied, and then a roaring deluge of fire inundates the central opening of the boiler. It is a kind of self-acting blow-pipe. This volumne of fire can be controlled by one man by means of the two stop-cocks as easily as the flame in an ordinery gas jet. This I have repeatedly witnessed on board the Caspian steamers. As regards the expense, I give the following data on the authority of a merchant captain who has used naphtha fuel for years. His steamer is of 450 tons, and of 120-horse power. He burnes thirty pood per hour of astalki to obtain a speed of thirteen nautical miles in the same time. One pood is about thirty-three pounds, and costs on an average from 5 to 6 pence. Thus a twenty hours' voyage at full speed for such a vessel costs £12. The fuel is as safe and occupies much less space than the amount of coal necessary to produce a similar effect, not to speak of the enormous difference in price and the saving of manual labor. Twe engineers and two stockers suffice for a steamer of a thousand tons burden. With the immense supply of natural petroleum, as yet only very slightly developed, and its application to the already guaranteed railway from Tiflis to Baku, and to the inevitable future ones beyond the Caspian over the plains of the far East, I think the subject is worthy of every attention.—*Correspondent London Daily News.*

British and Irish Flour Mills.

[*Continued from first page.*]

wide on face, driving by belt a cross shaft on the stone floor, which drives all the machinery for cleaning and dressing the wheat and flour. The engine has at present not been "indicated," but judging from the results obtained from a similar but smaller engine erected by the same makers at Mr. Clarke's mill at Earsham, the consumption of good coal, it is stated, will be about 2½ lbs. per horse power per hour.

The wheat cleaning and flour dressing machinery was supplied by Messrs. Whitmore & Binyon, engineers, Wickham Market. The former consists of a Child's aspirator, through which the wheat is first passed. Its next treatment is by a Murdoch smut machine, and the cleaning process is completed by a Throop's brush machine. The flour is dressed by the ordinary silk reels, the later developments of the art of flour manufacture necessitating a more complicated system of machinery, not being adopted at this mill. The mill takes its name from the river Waveney, which divides Norfolk from Suffolk, and which runs through the Earsham Flour Mill, which was first built in the reign of William the Conquerer, and which has been occupied for many years by Mr. R. H. Clarke, the proprietor of the Waveney Mill.

Yarmouth is an excellent centre for the flour milling industry. As already indicated, its facilities for the inward transit of grain and the outward transit of its products are of a superior order. The town is a rapidly growing one, the population being 41,819, so that the local demand for flour is constantly on the increase. In addition to the local demand, a large portion of the produce of Mr. Clarke's mills goes to Newcastle-on-Tyne and other places in the North of England.

Citico Steam Flouring Mill, Chattanooga, Tenn.

Messrs. H. C. Evans & Co. have their new process mills in operation and are turning out a most excellent quality of flour. These mills have a capacity of 150 barrels of flour and 500 bushels of meal per 24 hours. The machinery is all of the best and latest improved. They have five run of stones, viz: 3 sets of 42-inches French burr stone for grinding wheat; 1 set 30-inch stones for grinding middlings, and 1 set 30-inch stones (under runner) specially for grinding corn. They have six bolting reels or chests—2 for flour, 2 for returns, 1 dusting and 1 reel for middlings. These reels have all been clothed with "Dufour's" best bolting cloths, and with numbers specially adapted for the work they have to do respectively. One J. W. Pyne's purifiers is used for the middlings. This is said to be the best purifier now in use; an improvement on all others. They are manufactured and sold by the Bradford Mill Co., of Cincinnati. The "Great Western Bran Duster" is used for cleaning the bran. The flour is delivered into three separate and distinct bins—one specially for the "patent" flour, one for custom and one for the packers. The Eureka Flour Packer is used for packing the flour for shipment, which is done in sacks of 24 lbs., 49 lbs., 98 lbs., or barrels, as the market may require. The bran is all conveyed into a room that has a capacity of several car loads, where it may accumulate and be sacked at convenience, for sale or shipment.

These mills claim to have the best cleaning machinery for wheat to be found—the wheat is elevated from the sinks and delivered upon a separator screen and shaker, where all the chaff and light material is driven off by a fan. Then it passes through one of Kurth's cockle machines (which for itself is a wonder), removing all cockle and wild onion seed. Thence it passes into a Eureka smutter and scourer which runs at a speed of 625 revolutions per minute, driving all dirt and smut out. After all this fanning and scouring, it passes into and through the wonderful Becker Brush where every individual grain of wheat is brushed. This last process is for the purpose of removing the *fuzzy* and remaining portion of the blossom. Then the wheat is elevated and spouted to the grain bins over the stones ready for grinding.

All this cleaning machinery is placed in a closely ceiled room separate and apart from the milling room, thus keeping the dust and dirt entirely away from the flour.

This mill also has the best and most complete machinery for cleaning corn preparatory to grinding, and being provided with a corn bolt, will furnish their customers with bolted and unbolted meal as required.

The mill building is 50x225 feet, extending from Chestnut street along 7th to Railroad avenue, affording extensive storing capacity.

They now have in store about 10,000 bushels of selected wheat and engagements out for large amounts. Owing to the continued low water in the river, but a small portion of the wheat crop along the river has yet been brought into the market.

This mill is strictly a new process. The mill and all the machinery has been carefully selected and placed under direction and supervision of skillful millwrights, and it promises good results. Mr. P. W. Tyson, late of Danville, Ky., an experienced new process miller, is in charge. He bears the reputation of being at the head of his profession.

Mr. W. R. Carlisle of the firm has the management of the business, and has his office in the mill, corner of 7th and Chestnut streets. —*Times* (*Chattanooga*).

A Few Words to Young Steam Fitters.

BY A STEAM FITTER.

Feed Pipes.—The feed valve should be a globe or angle valve placed near the boiler, with the fewest possible joints in the feed pipe between it and the boiler. If it is a loose or swivel disk valve, it should be secured with solder (sweated in) in the threads of the double part of the disk, so as to make it almost impossible to lose the disk from the stem; a mark with a center punch or chisel is not enough. The valve should be so turned toward the boiler that the inflowing water will be under and against the disk, so that in the case of the loss of the disk it will not act as a check valve against the influx of the feed water. This arrangement will bring the pressure of the water in the boiler always against the stuffing box of the valve; but all things considered, it is best.

The check valve should be close to and outside the feed valve, with only a nipple between them. Always use horizontal check valves, as they admit of easy cleaning. With the ordinary vertical check it makes it necessary to take down some part of the feed pipe to clean it.

When two or more boilers are fed from the same pump, or when the pump is used for pumping water for some other purpose, it is well to have a stop valve on each side of the check valve, as it will enable the engineer to get at his check without stopping the water to the other boilers or elsewhere.

In passing through the boiler walls or cast iron fronts, care should be taken that the feed pipe does not nest, or the settling of the boiler will break it off.

Use a flange union on the feed pipe instead of the common swivel union; the engineer can take it apart with a monkey wrench, and it makes a more permanent job and it will not leak.

Never put a T in the feed pipe inside the feed valve for the purpose of a blow-off; make a separate connection to the boiler.

Blow-off Cocks.—Never use anything but a plug cock of the best steam metal throughout. The reasons for using a cock are that the engineer is always sure when he looks at it whether it is shut or open. It gives a straight opening; if chips, packing or dirt gets into the cock it will shear them off when closing, or if the dirt does not, the engineer knows it is not shut. Do not use an iron body cock with brass plug, for when the cock is opened to blow down a little the hot water expands the plug of the cock more than the body, and it is almost impossible to close it. Do not use a globe or angle valve, as you cannot always tell when it is shut; a chip or dirt getting between the disk and seat will prevent it from closing. I have seen two fine boilers destroyed from this cause. Gate or straight-way valves are subject to the same objections as globe or angle.

When it is practicable there should be a T with a plug in it in the blow-off pipe outside the blow-off cock, the plug to be removed when the cock is closed. By this means the engineer can always tell if he is losing water from his boiler.

The blow-off pipe should be large, with few bends in it, and fire bends are better than elbows. It should be attached to the bottom of the shell of a horizontal boiler, and not tapped into the head a few inches up. When there is a mud pipe, attach it to it at the opposite end from the feed pipe.

Safety Valves.—They are the main stay of the engineer, acting both as a relief and a warning signal. They should be attached to the steam dome up high. At the side is better than at the top, as they are not so liable to draw water when blowing off in that position. They should be large and have a large pipe connection all to themselves. The ordinary cross body safety valve is very much to be condemned, and I think in some countries there are regulations against their use; they are constructed to save making an extra connection for the main steam pipe, thereby drawing the largest amount of steam directly from under the disk of the safety valve. A weighted safety valve is better than a spring valve when it can be used, as the lifting of the valve makes practically no difference in the leverage; not so with a spring valve, for the higher it is lifted the more power it takes to compress the spring.

Guage or Try Cocks.—Guage cocks are various in style, the wood handle compression guage cock being a very good kind for all purposes. When setting guage cocks, care should be taken that they are not too low, and that the drip will not flow over the person who tries them. They should be tapped directly into the boiler if possible; but when it is necessary to use a piece of pipe to bring them through a boiler front of brickwork, give the pipe an inclination backward, that the condensation may run back and into the boiler. When the pipe inclines outward and down, the condensation remains in it and the cock, and will deceive the unwary, giving the appearance of plenty of water, with a short blow.

Glass Water Guages.—Water guages are best set when attached to a vertical cylinder at the front of the boiler. The cylinder should be connected to the boiler with not less than one inch pipe, top and bottom; the top or steam connection should be taken from the boiler shell near the front head, and not from the dome or steam pipe, as the draught of steam in either will cause the glass to show more water than the boiler contains. The bottom or water connection should be taken from the front head at a point where about two-thirds of the water in the boiler will be above it and one-third below; this will lessen the chances of the pipe stopping up with mud, etc., and it should also be provided with half inch pipe at the lowest point for a blow-out. When guage glasses are set in this way the condensation in the cylinder is downward, and the flow of water being toward the boiler through the bottom pipe, the tendency is to cleanse the glass and cylinder and keep them so.

Steam Guages should never be set much above or below the boilers to which they are attached, as each two feet of fall or elevation from the direct connection is nearly equal to a difference of one pound on the steam guage; always when the guage is below, for the condensation in the guage pipe fills it with water, which leaves a pressure on the steam guage equal to the hydrostatic head, which is a little over two feet perpendicularly to the pound per steam guage, giving the guage the appearance of being weak. When the guage is above it is not always so, though generally, the pipes being long and of small diameter or trapped, which prevents a circulation of steam in them, they fill with water, which acts against the pressure from the boiler and gives a guage the appearance of being strong. A good way is to connect the guage pipe to a boiler below the water line, say 12 or 18 inches and the guage on the boiler about 10 inches above the water line, using no water trap or siphon, that the water may run back from the guage when there is no pressure in the boiler, thereby preventing the possibility of freezing or of getting steam to the spring of the guage.

Sometimes a steam fitter has to run a guage pipe a long distance to an office or engine room. When such a guage is far above the boiler he should run a large pipe direct from the steam dome and give it sufficient pitch to clear itself of water; it should be covered with some non-conducting material, and be of such size that the flow of steam through the pipe to supply the loss by condensation will be so slow as not to interfere with the flow of water along the bottom of the pipe in a contrary direction, and it should have a siphon immediately under the guage.

When it is necessary to have a guage very much lower than a boiler, fill the pipe with water, but before doing so remove the glass and lift the hand or index over the stop-pin, and mark where it remains stationary; now fill the pipe to its highest point with water, then with two knives draw the index from its spindle and set it back to the mark where it remained stationary before the pipe was filled, and press it on; then bring it to its normal position on the stop-pin and adjust the glass.

The Main Steam Pipe for Heating Apparatus should be high up on a boiler, and any pipe larger than 2 inch should not be tapped in, but connected with a flange bolted or riveted to the boiler. Two and a half inch pipe and larger sizes have eight threads to the inch, and will not make a good job otherwise.

Automatic water feeders, combination water guages, or steam guages, should not be tapped into the steam heating or engine pipe, as the draught of the steam through the pipe interferes with their proper working.

Engine or pump pipes should not be taken from the steam heating pipe, as the draught they cause relieves the pressure in the heating apparatus and spoils the circulation, especially if it is a direct return gravity circulation.

With an automatic return steam trap applied to an old job, it will not be necessary to move the engine pipe, but should the circulation be still defective, remove the engine pipe to shell of boiler remote from heating pipe.—*Scientific American.*

Russian Wheat.

THE EXTENT TO WHICH AMERICAN COMPETITION IS INJURING RUSSIA'S WHEAT TRADE.

Robert Orbinsky, a representative of the Russian Government now in this country for the purpose of investigating the grain interests of the West, with especial reference to elevator construction and operation, and question of railroad transportaition and rates, has written a communication in which he says: On the English market the wheat of southern Russia appeared the first time in the winter of 1802-3, when the prices, under the influence of bad crops for several years and under the then existing corn law, had raised to exceptional height of 110 shillings per quarter. You know, sir, that under this law foreign grain trade was nearly impossible in England beyond exceptional circumstances as that I mentioned. In the following years we continued to export from southern Russia, but it was rather to Spain, France and Italy that we did so, than to England. Then the bad crop of 1817 again opened to us the latter market, and from that time we have not ceased to occupy there a place rising every year. In 1847 we were actually the first furnishers of bread for the English nation. We could do so because the production of our country was not limited there, and the prices for grain in southern Russia were lower than anywhere in the world. There have been years when in the market of Odessa, itself pretty far from the places of production, a bushel of wheat of no bad quality could be sold with profit for the seller, for fifteen cents, and that in moments when the average price in London market was sixty shillngs per quarter, And yet the distance from Odessa to London is somewhat shorter than the distance between London and New York. You can see by it, sir, how much money under such circumstances could be made by foreign merchants in our southern country, and you will understand how a great part of the Greek insurrection has been paid off by Russian wheat.

Since that time prices certainly have changed, become lower in England and higher in Russia, but still Odessa remained the queen of the grain trade of the world, growing to an average amount of twenty millions of bushels per year. America, as the French used to say, was not yet invented for grain trade. That happened only about 1830, and since that time the role of America is increasing from year to year, so that now it becomes truly overpowering. The last year your country has furnished no less than 51 per cent. of the want of England and we only 22. Ten years ago it was exactly the contrary of that proportion.

I can say I was the first man in Russia that had foreseen and foretold such a result. In 1875 I published a brochure on that subject, and was laughed at by our press. It was considered a product of my imagination. I was called an incorrigible pessimist and my pessimism not worthy of attention. So I was, indeed, but events have proved that truth was on my side. Then it was very natural for my Govenment to inquire in what manner and by what way such a change could take place. With this inquiry I had the honor to have been charged.

Till now the productive power of Russia is great as that of America; perhaps even greater. In 1870 your wheat crop arrived to the cipher of 230,000,000 bushels, and the amount of ours was not beyond 325,000,000. But our population, however, in the greater part fed by rye, is nearly twice that of yours, and consequently the surplus we can sell abroad is less than yours. But it is not the quantity that decides the question, but the kind of use which is made of it, and on this behalf certainly nothing can be more instructive for us than the example of America.

The Baker's Art.

(Translated for *The Miller* from "*Le Meunier.*")

Bread, as we are all aware, is obtained by baking dough made from flour and water. In most cases wheaten flour is employed, but other cereals, as for instance corn or rye, furnish flour suitable for baking purposes. The theory of the manufacture of bread has been thoroughly explained of recent years, and practical men have turned their attention to introducing mechanical power into this industry to replace the manual labor which has hitherto been employed. Although the results obtained by the use of mechanical means are still questioned by many, and the machines have not attained the popularity counted upon by their inventors, the problem will no doubt be satisfactorily solved ere long.

In its ordinary state, wheaten flour contains a proportion of water varying from 12 per cent to 18 per cent, according to the kind of wheat and the nature of the crop. This proportion can be regulated in the flour by the process of drying, and the quantity of water need never vary, no matter what the nature of the wheat has been from which the flour has been obtained. This process is an important advance in the art of milling, and one in which many improvements have been made. Besides water, which we have just mentioned, flour contains:

1. Nitrogenous matter insoluble in water of which gluten is the type.....	12 to 13	per cent
2. Nitrogenous matter soluble in water of which albumen is the type.....	2	"
3. Non-nitrogenous matter insoluble (starch, 60 per cent; fatty matter, 1 per cent; and a small percentage of cellulose).....	61 to 62	"
4. Non-nitrogenous matter soluble (dextrine and a little sugar).....	8	"
5. Mineral substances. (Phosphate of magnesia and of chalk, salts of potash, of soda, and of silica).....	1 to 2	"
Total (exclusive of water).....	84 to 87	"

If we wish to obtain the greatest amount of nourishment from all the elements of the flour they must be rendered soluble, and the process of baking, by acting principally on the gluten and starch, has precisely the preparation of this dissolution in view. The grains of starch are swollen by the absorption of the flour in the water, and the baking causes them to burst by breaking the lining of the cells in which they are confined. The process of fermentation stretches the gluten to allow of its being more easily attacked by the gastric juices of the somach. Thus the manufacture of bread comprises three distinct operations:

1. The absorption resulting from the kneading.

2. The fermentation which renders the dough less dense by increasing the surface presented by the gluten to the gastric juices of the stomach.

3. The Baking.

The richness of the flour in gluten renders the dough more plastic, and the bread is consequently more nourishing. Several kinds of apparatus have been invented with the view of determining this richness, among which may be mentioned Boland's "Aleurometer," and Robine's "Appreciatuer." The richness of flour in nitrogenous matter varies according to the kind of wheat from which it has been made, as may be seen from the following table which we extract from a work published by Mr. B. Corenwinder, Director of the Society of Science and Agriculture at Lille:

Origin and denomination of the wheat.	Composition of the flour. Water.	Gluten and albuminoids.	Starch and salts.	Nitrogen in every 100 parts of dry flour.
Galland (French).....	13.15	6.81	80.04	1.14
Blue wheat (French)...	12.61	6.28	81.11	1.16
Chilian.....	13.00	7.56	79.44	1.39
French (2nd quality)...	12.04	7.75	80.21	1.41
Armentieres.....	13.20	8.03	78.77	1.48
Californian.....	11.00	8.23	80.77	1.48
Oregon.....	13.75	8.17	78.08	1.51
New Zealand.....	11.85	8.98	79.17	1.63
American winter.....	12.00	8.52	79.48	1.70
White Australian.....	14.00	11.18	74.82	2.08

The Galland wheat furnishes a larger proportion of flour than the other wheats, which may be attributed to the exceptionally large size of the grain; unfortunately the quality of the flour leaves much to be desired in some respects—it is wanting in whiteness, poor in nitrogenous matter, the dough does net knead well, and it produces a bread without cohesion.

The blue wheat, so called from the bluish tint of the husk, is sometimes known by the name of 'Australian wheat, although, strictly speaking, the term is incorrectly applied. The grain is pretty large, and of a brownish color; the flour is short, as it does not contain a sufficient quantity of gluten.

The Chilian wheat has a white grain, well formed, regular and moderately large. It produces a flour very similar to the second quality French wheat in respect to the richness in nitrogen, and it is classed in the second rank among the products of America. The different varieties of wheat from Armentieres, Estraives, Bergnes, Meraille, and other localities of the North of France, are, in general, more highly prized than the Californian wheats.

The Oregon wheat is of superior quality; the grain is white, clear and regular, and it gives a large proportion of superior flour. It takes its place in the first rank among the soft wheats.

The New Zealand wheat is white, pretty regular and produces a flour rich in nitrogen.

The American winter wheat grown in Ohio and Michigan gives a very fair quality of flour. The grain is of a brownish color, small, translucent, rough in appearance, and rich in nitrogenous matter.

The Australian wheat is of a superior class, and maintains its reputation both with regard to its suitability for sowing or for consumption. Its grain is clear, regular and of moderate size. The proportion of flour obtained is large, the quality good, and it is richer in nitrogenous matter than any other kind of wheat. In short, the fertile soil of Australia produces the finest wheat in the world.

The best kinds of flour, and those which are best liked by bakers, are of a dull white color, slightly approaching to yellow, unctuous to the touch, do not contain a single particle of bran, and possess an agreeable and characteristic odor. When mixed with half their weight of water, and thoroughly kneaded, they produce a homogeneous dough (containing neither lumps nor foreign bodies) which may be drawn out in thin sheets, possessing a certain degree of elasticity.

If flour is submitted for a certain time to a temperature of 100° C. (212 F.) it loses a large portion of its hygroscopic water, generally from 12 to 18 per cent, according to the manner of, and the time employed in, the drying; and it is on this property that the various means employed for the preservation of flour are based—processes which have long been the object of important improvements at the hands of C. Toualion. When again exposed to the action of the atmosphere, the flour reabsorbs the water which it previously lost. One of the chief causes of change in flour is the excess of humidity contained therein; therefore millers cannot guard too much against the inconvenience arising from excessive or irregular damping of the wheat. A slight damping issometimes necessary, but if the flour is destined to be kept for a lengthened period it must be dried. Flour, when too moist, agglomerates, and sometimes becomes quite hard. Fermentation is hereby engendered, and the gluten undergoes certain changes which render the flour unsuitable for producing a white, light bread, agreeable to the taste. An excess of humidity also favors the development of certain cryptogams (fungus), which impart a disagreeable odor to the flour and give it unhealthy or even poisonous properties.

Triumph of Electrical Science.

In the cable news of a few days since it was stated that the French Atlantic cable was "broken 161 miles from St. Pierre Miquelon, in 500 fathoms of water." These few words show one of the many triumphs of modern electrical science. Here is a wire cord buried in three-fifths of a mile of the water of the ocean, and 180 miles from land—and yet the people on shore can exactly locate the points at which it is broken. Strange as that seems, it is actually done, and has been time and again. The repairing vessels will go out to the indicated point, throw over their grappling hooks, and within a few hundred yards will find the broken ends and splice them. This wonder is accomplished, first, by exact knowledge of the laws of electricity, which make known what amount of currents a wire of given dimensions will carry, and the resistance it must overcome in going a given distance, and next, by the instruments made by the mechanicians of the present day which will make the operation of both laws visible to the experienced observer, even if the brake in the cable is a thousand miles away and two miles under the sea.—*Philadelphia Ledger.*

A NEW PROCESS OF GLAZING.—A new process of glazing has been introduced by which putty may be altogether dispensed with. Vulcanite is the substance that is to take the place of the old material. The window sashes under the new system are to be so arranged that the glass may be fixed into the grooves prepared for it, and, coming into contact with a strip of vulcanite attached to the frame, the glazing is complete. Any unskilled workman can fix the glass, and when fixed, there is no putty to perish under the action of the atmosphere.

Balancing Millstones.

[Translated from the Austro-Hungarian Miller for the UNITED STATES MILLER].

Every miller ought to know how very important it is that the runners of millstones be exactly balanced.

There are, however, many millers who bestow little or no care thereto, and think it is quite sufficient that the stones are at a standing balance; but it is just in the accuracy of the running balance that the great secret of manufacturing good and wholesome flour lies.

Even in the smallest and most imperfect mill the greatest care should be bestowed upon the stones, that is: First, to have a level grinding surface, and second, an accurate standing and running balance.

We hope there are not many millers who do not understand how to balance the stones; but for the benefit of those who are not posted we make the following explanation:

To begin with, the bed-stone must lie level; then the spindle must be brought to a perpendicular.

This having been done, the runner is laid upon the cock-head of the spindle, however, without laying the driver upon the spindle. We can now find out whether it is in standing balance or not.

To this end we press with our hands in various places on the outer edge of the stone, and, if the stone leans to one side, it is a sign that it is the heaviest on that side; then we take weights, in preference scale-weights, and lay them upon the opposite side, that is, upon the lightest, close to the edge, and test them until the stone is balanced.

Having succeeded in this, we, with a chisel, make a longitudinal hole close to the edge, large enough to contain the necessary amount of lead.

The hole should be wider at the bottom than at the top, in order that the lead may not fall or fly out when the stone is put in motion.

The weights used and the pieces of gypsum or stone chiselled out are now weighed together, and an equal amount of lead is poured into the hole or holes. (This treatment is not necessary with some stones of modern construction, they being already provided with shot or balance holes.

The runner is now taken off and the driver put on, in order to see if the stone runs true. If the stones strikes when in motion, it is not in running balance.

We now procure two thin, well-planed boards, three-eighths of an inch thick and 4x6 inches wide, and long enough that the ends may be made fast to the floor outside of the stone.

These boards are fastened on each side of the spindle, midway between the spindle and the outer edge of the stone.

The stone is now put in motion, and lowered down, so that it runs tight upon the boards; but beforehand a platform is constructed above the stone, preferably of a plank three inches thick and 12 to 14 inches wide, the ends of which are fastened to solid supports, so that we can easily work thereen.

This plank should be about 1½ to 2 inches above the stone. With a chisel we now accurately turn or true the back of the stone.

As soon as this has been accomplished, we test the standing balance again, for it often happens that it changes again after the turning.

The stone is put in motion, however, first screwed up, so that it does not touch the boards, and the motion gradually increased until it attains the number of revolutions used in grinding.

We now take a sharp-pointed lead pencil and hold it tight against the upper plank in such a maner that it lightly touches the stone about six inches from the edge. This is the side that runs the highest.

The reason that the stone runs high on the heaviest side is that the centre of gravity or weight is too low on that side, that is, lies under the point of suspension, while, on the other hand, the centre of gravity of the opposite side lies above the point of suspension.

In order to change this we must try to bring both centres of gravity in horizontal position to one another.

After ascertaining which side runs high, we take a certain quantity of shot, lead, or pieces of iron, that is, where balance-boxes exist, (some stones are provided with solid cast-iron balance-weights, that may be screwed at pleasure) and, screwing the box on the high side up and on the opposite side down, divide the weight in two equal parts and fill each box with one-half thereof.

We must be very careful in weighing the weights that each side receives the same amount, otherwise the standing balance will be destroyed. We continue this manner of procedure until the true balance is obtained.

In old stones without patent balances we always try to affix the lead under the lowest band; of course we can pour the lead in the top of the stone, as mentioned in speaking of the standing balance.

Various patent balances have been inserted into the old stones, which have all, more or less answered their purpose.

A standing balance is simply an equal weight on all sides. In a running balance the centre of gravity must be just exactly as far removed from one grinding face as from the other.

An Infamous Business.

May the curse of God rest upon an impious traffic which is robbing our State of its manhood; turning the feet of our sons away from the paths of industrious fathers into condemned criminals. It certainly would seem that enough of disgrace and destruction has already been visited upon our homes to warn all those who have anything of self-esteem and family love remaining, to shun an indulgence which saps their strength, distracts their minds, casts to the winds the fruits of a life-time's labors, and leads them to deeds which bend their heads with shame and plunge their families into the depths of despair. But the end is not yet. Infatuations still lead men to pursue gain, even where loss and ruin are surest to be found, and the community, while it pours out its sympathy for the fallen, still accords respectability to a traffic which should be held in the deepest detestation for the evil which it brings upon society.

Instances recur which are so like hundreds which have gone before that the details need hardly be recited. A man, with a beautiful home, a devoted wife and group of lovely children; a man who, by nearly 20 years of constant devotion to the interests of his employers, had won their fullest confidence, and who stood before the community as a model of unyielding industry, suddenly appears a confessed criminal, and in a day is transformed from an apparent promoter of public virtue to an enemy of society, who has his liberty only at the price of pledges from his friends. Does any one need to be told the cause of the transformation? Is it necessary to tell again how the glittering snares of the stock gambler entrapped the feet which trod so firmly the path of virtue and industry; how the mind was turned from its sober thoughts and honorable ambitions by the visions of shortcuts to fortunes; how the blinding promises were false as perdition, and yet so alluring that he who pursued them was led in the deeper, until the funds of employers, confidently entrusted to his care, were secretly appropriated to feed the unholy fire of the gambling passion; how the theft was ere long discovered, and how the bars closed in the wreck of reputation and honor, while tears flow in the home and heartfelt sympathy and regret fill a neighborhood.

But what use is it to recite such painful incidents when the evil seems to grow the while? No sooner does some wretched conspiracy of impious men fall into the hands of the police than another, even more glaring, springs into view. And the people—poor, senseless throng—crowd the counters of the swindling cormorants giving their hard-earned savings in return for naught but worthless promises. For a few days the gold pours in, and then the throng comes some morning to find the doors closed and their treasures gone beyond recovery.

One would think that these specious frauds would be recognized by the shallowest brain, and yet experience proves that victims are always ready to jostle one another in the rush to ruin. It is plain that there should be some power to guard the people against these coarser forms of fraud, for these are the traps that catch the poor and the unwary. There is one thing that the public should demand from the press, and that is, that the insidious snares should not be spared in the public prints.

What use is it that the editorial colmms of our dailies warn people against them so long as their glittering advertisements are received by the publishers? What use to preach virtue when the hands are filled with the rewards from vice? The press is a sharer in the fortunes made by ruining homes and wrecking lives, and so long as this is true, the friends of humanity will have cause to mourn.

The public has its eye open to the evil, and yet it lives. In the city, some business houses which employ many men have their spies abroad, and as soon as any man in their employ takes a hand in stocks, he is watched and his accounts scrutinized. What better evidence could be had of the way in which the business is regarded by our leading men? And yet the evil grows. Not satisfied with the gambling in railway and other securities at the East,

they have introduced the California system, and already victims are falling just as men fall when plague settles down upon a city. Only last week it was a bank officer who went down to perdition in New York, by breach of trust, through gambling in stocks. Thus, East and West, the evil spreads, and distrust rises as virtue sinks. What can save the people? Nothing, unless each one works to save himself, and to spread a truer idea of the danger. Let it be understood that whoever enters the business in any form places his foot upon dangerous ground, which may ere long part and engulf him. As a man values his reputation; as he loves his home, his wife, his children; as he values a right life here and cherishes a hope beyond, let him shun the evil—the crowning evil of the day.—*Pacific Rural Press.*

Winding Up a Horse.

The Rev. Dr. Chamberlain, in a letter to the *American Missionary*, from Mudnapilly, India, gives the following singular experience he had with a balky horse:

Nineteen years ago, says the venerable divine, I bought in Madras a peculiar kind of horse. He had to be wound up to make him go. It was not a machine, but a veritable live horse.

When breaking him to go in the carriage he had been injured. An accident occurred in starting him the first time, and he was thrown and hurt and frightened. It made him timid; afraid to start. After he had once started he would never balk, until taken out of the carriage. He would start and stop and go on as many times as you pleased, but it was very difficult to get him started at first each time he was harnessed in the carriage.

He was all right under the saddle, an excellent riding horse, and would carry me long distances in my district work, so that I did not wish to dispose of him; but I could not keep two; whatever I had must go in carriage as well as ride, and I determined that I would conquer.

How I have worked over that horse! At first it sometimes took me an hour to get him started from my door. At last, after trying everything I ever heard of, I hit upon an expedient that worked.

I took a strong bamboo stick, two feet long and over an inch thick. A stout cord loop was passed through a hole two inches from its end. This loop we would slip over his left ear down to the roots, and turn the stick round and round and twist it up.

It is said that a horse can retain but one idea at a time in its small brain. Soon the twisting would begin to hurt. His attention would be abstracted to the pain in his ear. He would forget all about a carriage being hitched to him, bend down his head, and walk off as quiet as a lamb. When he had gone a rod the horse boy would begin to untwist, soon off would come the cord, and the horse would be all right for the day. The remedy never failed.

After having it on two or three times he objected to the operation, and would spring about and rear and twitch and back, anything but start ahead, to keep it from being applied. We would have, two of us, to begin to pat and rub about his neck and head. He would not know which had the key. All at once it would be on his ear and winding up. The moment that it began to tighten he would be quiet, stand and bear it as long as he could, and then off he would go. It never took thirty seconds to get him off with the key. It would take any hour without. After a little he ceased objecting to have it put on. He seemed to say to himself, "I have got to give in, and may as well do it at once," but he would not start without the key. In a few months he got so that, as soon as we got into the carriage, *he would bend down his head to have the key put on*, and one or two turns of the key would be enough.

Then the key became unnecessary. He would bend down his head, tipping his left ear to the horse boy, who would take it in his hand and twist it, and off he would go.

My native neighbors said, "That horse must be wound up or he cannot run." And it did seem to be so.

When he got so that the "winding up" was nothing but a form, I tried to break him of that, but could not succeed. I would pat him and talk to him and give him a little salt or sugar or bread, and then step quietly into the carriage and tell him to go. "No." Coax him. "No." Whip him. "No." Legs braced, every muscle tense for resistance. A genuine balk. Stop and keep quiet for an instant, and he would hold down his head, bend over his ear, and look around for the horse boy appealingly, saying very earnestly by his actions, "Do please wind me up. I *can't* go without it, but I'll gladly go if you will." The moment his ear was touched, and one twist given, off he would go as happy and contented as ever horse could be.

Many hearty laughs have we and our friends had over the winding up of that horse. If I were out on a tour for a month or two and he were not hitched to the carriage, or if he stood in the stable with no work for a week or two during the monsoon, a real winding up had to take place the first time he was put in. We kept him six years. The last week I owned him I had to wind him up. I sold the patent to the man that bought the horse, and learned from him that he had to use it as long as the horse lived.

Sir Henry Bessemer has had an experience that few inventors are allowed to have, in living to see the world-wide results of his invention, and to realize the economy in resources which has been made possible by its use. The sewing machine and electric telegraph have been labor-saving in their effect to an enormous extent, but with these it would have been difficult for their originators when alive to estimate the monetary value to mankind of the discoveries. With the making of steel the case, however, is different, for the saving can be figured down to a nicety on every ton made, and the annual product of the various civilized countries is pretty accurately known. From data thus collected it is estimated that in labor and material the world is a gainer to the amount of $100,000,000 a year by using the Bessemer process in converting ore into steel. Or considered in another way, the advantage of a low-priced enduring material, such as Bessemer steel, when compared with iron, has been made a matter of calculation, as far as railroad tracks are concerned, with the following astonishing results: Mr. Price Williams, who is an expert in matters of this kind, has stated that by substituting steel for iron a saving in expenditure will be made during the life of one set of steel rails on all the existing lines of Great Britain of not less than $850,000,000. In view of these facts, says the New York *Sun*, if Sir Henry has obtained in royalties the sum of $5,250,000, most persons will concede he has got no more than he deserves.

Eight Points in Bread-Making.

We sum up briefly eight essential points in bread-making, as gathered from recent contributions on the subject and formed from the inter-editorial consciousness, to-wit:

1. Good wheat for flour. Some varieties of wheat, such as are deficient in gluten, will not make good flour.

2. A good miller to grind the wheat. The bread-maker should be sure to find the good miller.

3. The wheat should not be ground when very dry. Choose a "wet spell" for the grinding.

4. The flour should be sifted before using, to separate the particles.

5. Good yeast. This is made from new hops. Stale hops will not, with certainty, make lively yeast.

6. Thorough kneading. After it has had enough, knead it a while longer.

7. Do not let the dough rise too much. Nine out of every ten bread-makers in this country let their bread "rise" until all its sweetness has been destroyed.

8. The oven can be too hot as well as too cold. The "happy medium" must be determined upon and selected.

There are three kinds of bread, to-wit: sweet bread, bread, and sour bread. Some housewives make sour bread, a great many make bread, but very few make sweet bread. "Sweetness" in bread is a positive quality that not many bread-makers have yet discovered.

Consumption of Timber by Railroads.—The consumption of timber for railroad ties has reached enormous dimensions. The *Lumberman's Gazette* estimates that as we have now about 90,000 miles of railroad the annual consumption of ties or sleepers alone is 40,000,000, or thirty years' growth of 75,000 acres. The tremendous destruction of cross-tie timber, only certain kinds and sizes of which can be used for the purpose, is using up the stock within reach so fast, and good ties are in consequence becoming so hard to get, in many quarters, that railway managers are seriously turning their thoughts towards some substitute. Some railroad companies advocate tree planting, and others iron sleepers, which are now extensively used by Belgium roads, and which are being adopted by the German and some English roads. Glass and prepared wood sleepers are also recommended.

The "Washburn A" Mill.

The following description of the Washburn A mill we take from the *Pioneer Press:* Among the giant mills which rise on every hand about the milling districts of Minneapolis, the great "Washburn A" looms up conspicuously. Beside it the Humboldt and the Pettit and the Arctic and others in that vicinity look like pigmies. From the canal way back to Second street, a distance of 250 feet, and with a frontage of 100 feet on the canal, the solid walls of limestone are slowly rising under the skillful guidance of Mr. McMullen, the builder of the "B" mill. These are to be carried to the height of eight stories, thus making the building not only the largest mill on the ground, but the highest of any in the city, for the distance from the level of the canal to the cap stone will be 114 feet. To gain an idea of its size one needs to walk about it, both outside and in. The railroad which runs through the building on the second story seems to take up but little room, and yet think of a train of cars passing through any other of our public buildings, how much room would there be left besides? The height of the basement story seems considerable to look at, yet one gets but an imperfect idea of the vast amount of space until he is told that the western half, which is to be used for storing, will hold 100,000 bushels. He can get another idea of its size by figuring the area, when he will be astonished to discover that there are enclosed 8,850,000 cubic feet. How much flour this monster is to turn out when completed, is a secret which Mr. Washburn keeps to himself. It certainly is large enough to make from 2,500 to 3,000 bbls per day, for it will contain twice as much room as the old "A" mill, on whose site it stands, and that mill the last day it run made over 1,500 bbls. In regard to the process to be used it is premature yet to speak, but this much can safely be said, it will be the most approved now in use. Mr. Washburn has been testing the Hungarian process in the "B" mill for some months past, and the conclusion has been reached that the exclusive Hungarian system has some disadvantages connected with it. A portion of the walls are now up to the third story, and the entire building will be under roof by the first of December. When completed, there will be nothing to compare with it in the United States as regards size, and if there is anything across the water its equal, we should be very glad to hear from it."

The Tongue and the Sense of Taste.—The tasting power of the tongue is not regularly distributed over all parts of that organ. According to the unanimous judgment of physiologists the back part of the tongue is best qualified for this function, while there is a difference of opinion as to the tip of the tongue. The older observers have repeatedly said that a tasting power in the tip is limited to certain persons, whereas more recent ones affirm its presence in all men. In experimenting on the so-called "reaction-time," Herr Vintchgau lately met with a case of limited tasting power in the tongue-tip, and this led him to a thorough investigation of the subject. The observations were made with solutions of chloride of sodium, sugar, quinine and citric acid. The results were as follows: There are persons who are capable of acurately distinguishing all principal tastes with the tip of the tongue alone; others perceive with certainty the qualities of sweetness, saltness, acidity, but less distinctly bitterness. Others, again, can only with great difficulty distinguish tastes with the tip of the tongue; and, finally, there are individuals who cannot do this in the least.

Borax and Nitre for Hoarseness.—*La France Medical* remarks that these two salts have been employed with advantage in cases of hoarseness occurring suddenly from the action of cold. The remedy is recommended to singers and orators whose voices suddenly become lost, but which by these means can be recovered almost instantly. A little piece of borax, the size of a pea, is to be slowly dissolved in the mouth ten minutes before singing or speaking. The remedy provokes an abundant secretion of saliva, which moistens the mouth and throat. This local action of the borax should be aided by an equal dose of nitre, taken in a warm solution before going to bed.

A new automatic pumping engine is in operation at the Providence (R. I.) water works. It has ten cylinders, five for water and five for steam, arranged alternately in a circle. It possesses an enormous capacity, but it will, without attention from the attendant, do the duty of pumping either for a single faucet or for a dozen steam fire engines. The cylinders are all connected to a single central upright shaft, which automatically either make one revolution in five minutes or twenty-five in one minute, according to water required. If the fire burns low, the engine will open the damper; if this is not sufficient, it will put on the blower.

"You don't seem to have made much money in bringing your hogs down here?" was the casual remark of a bystander to a speculative agriculturist, who had driven his hogs seven miles to the market town and sold them for precisely what was offered him before he left home. "Well, no," said the agriculturist, pensively, "I hain't made no money, but then"—brightening up—"you know I had the company of the hogs on the way down."

Cut This Out.

"United States Miller" Subscription Blank.

We hope the milling friends of the United States Miller will be as liberal to it as it has been in the past, and will be toward them in the future. Subscription price, one year $1.

We shall be pleased to have an early response to this. Fill out the blank below, enclose with money in an envelope, seal carefully and send at our risk. A receipt will be sent by return mail. Address all communications to the

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Editor of the United States Miller, *Milwaukee, Wis.—Sir: Send one copy of the United States Miller for one year, for which find enclosed* $1.00.

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Great Wheat Farms.

Ninety years ago, Arthur Young, writing to President Washington, expressed considerable doubt whether agriculture would ever be a paying occupation in the United States. He elaborately calculated that the net profit from 300 acres of land in England, after the deduction of taxes and other expenses, was £823 10s, or 5.15 per cent on the combined capital of the landlord and tenant (£6,240); whilst in America the net profit, after similar deductions had been made, was £206 14s, or 10.55 per cent on the capital of £1,951, the farmer being his own landlord. It is curious to study the figures in the light of present events, when the English farmer is making a very different complaint, and from causes of which the author of "Agricultural Survey" never even dreamed. If any one had told Washington's correspondent of 1789 that in 1879 the American wheat growers would threaten ruin to the English farmers, he would doubtless have been called a madman. Yet ninety years ago American agriculture was infinitely more promising than that of Australia less than twenty yers back, though the Southern Continent now competes with the New World for the profits of feeding the old one. When the first European landed in New Holland they found a land producing no vegetable fit for food, no animal akin to those in the regions they had left, and no domesticated cattle of any kind. Repeatedly the convicts were on the point of starving, and probably would have perished had it not been for the abundance of kangaroos, and the fortunate arrival of a ship from Java. In 1804 flour was quoted in Van Dieman's land at £112 per ton; three years later wheat was £4 a bushel, and appeared so likely to rise to a still higher price that a garrison order was issued making it a penal offence for the settlers to charge for it more than £32 a quarter. But times have changed. Last year New South Wales alone had feeding within its borders over twenty-seven millions of sheep and four million of horned cattle, while the colony of South Australia alone in this year prepared to export, after satisfying her own demands and those of her immediate neighbors, no less than 170,000 tons of wheat. In America, however, there was always some agriculture. The Indians cultivated maize from the earliest period, and among the first plunder of Miles Standish and his companions was the corn which the "red sons of Belial" had stored away for winter use. The Aborignes taught the Virginians and New Englanders to cultivate this grain, and, as mines were not worked in America for long after its first colonization, the earliest settlers depended on farming as their main resource. Yet, for one century at least, wheat-growing was on its trial in America, and so little progress did tillage make, that we find, as late as 1660, the Massachusetts townships paying a bounty to any one who would buy and keep a plow in repair for use of the neighboring farmers. The stony New England clearings required all the aid of art; but they got so little that the narrow-minded Puritans looked upon a man who ventured to make improvements as a reckless innovator, certain to come to grief himself and bring ruin to the commonwealth. A century ago, if he did not plant just as many acres of corn as his father did, and that, too, "in the old of the moon," if he did not sow just as much rye to the acre, use the same number of oxen to break up the soil, and to carry home the crops on exactly the same day as his neighbors did, he was shunned in company by old and young, as a visionary who imagined that the wisdom of his ancestors was not good enough for him.

Last year the United States sent to Europe over nine million quarters of maize, and this year the amount of wheat to be exported cannot amount to much less than 190 million bushels. No sterile Northern State ever made much advance in grain growing, and though Virginia and Maryland were rich, the amount of land capable of raising wheat was but limited, and on the rich river "bottoms" the exhausting tobacco culture for a time paid much better. Even there the expense of clearing the soil was so great that the fact of its costing little to buy the freehold did not counter-balance this original disadvantage to the farmer. But when Illinois, Iowa and Missouri became opened up, in the treeless prairies of this farther West, the corn grower revelled. The soil was rich—there were no forests on it—and the plow was merely required to be run through its stoneless extent to prepare it for grain. When the Indians—who, it must be allowed, were a drawback to the delights of the new Cereal Paradise—were removed across the Mississippi, settlers and cultivation spread still more, and when railways were run through these prairie States, it was not long before even the highly-colored advertisements of the companies which had "donations" of land to induce them to build these iron roads could convince the most sanguine farmer that between the Ohio and the Platte there was much space for a newcomer who was not enamored of extracting grain out of sage-brush and alkali wastes. Meantime, St. Louis and Chicago became great "wheat centres," and prospered as the cities of the middlemen who tithe the farmers' grain before it reached the Eastern States and Europe. In some quarters, indeed, it was found that to grow a surplus crop would not pay. It is not thirty years since that, in some parts of Illinois, maize brought only five cents per bushel, so that, after all the pigs that could be purchased had been fed on it, the remainder was burnt as fuel.

But though this practice is now only traditional, it has been found by those who have carefully watched the progress of events that the "wheat centre"—or the central point around which cluster the largest production of that cereal—has been gradually shifting farther and farther West. Within this century, the six New England States grew the wheat for their own bread. They could not now, as Mr. Manegault has clearly demonstrated, feed themselves with wheat flour for a fortnight. Once the "wheat centre" stood in New York; then it migrated to Pennsylvania, a State which can now eat up all it can produce in ten months. Virginia was never a wheat centre, but in 1860 it produced 12 bushels for every person in it; whilst in 1870 it only raised 6, and probably the return per head is at present very much lower. Ohio, Indiana and Illinois were successively for a time the States in which wheat culture centered, but successively the yield fell off in these regions, until at the present time the "centre" is stationed somewhere between Iowa, Wisconsin and Minnesota. There are, however, already signs that, true to its previous history, the farinaceous metropolis will not long stop there, but—as its migration has always been westward—that it will progress stil further towards the setting sun. To do so it must take a long leap, a fact which those who have made their calculations as the wheat-producing capabilities of the States have generally failed to enlighten their victim regarding. The reason is this. East of the Rocky Mountains is a country comprising seven-sixteenths of the United States, which is a desert, with not five per cent of improvable land. The cold during the winter is intense, and the summer heats correspondingly great. During a short season it affords a little pasture for stock but, as its capabilities for feeding cattle are only during the season of greatest plenty, not during that when other food is scarce, even as a grazing region it can never be of much value, and on its soilless surface the wheat culture will never linger. The reason for this migratory character of the "wheat centre" is plain. The soil is getting exhausted with continuous cropping. The same crop is grown year after year on the same fields, because it pays best. The land is rich, but it cannot bear this constant exhaustion, The farmer cannot afford to buy artificial manure to fertilize it; while this system of tillage allows of no domestic manure being made, so that in time everything is taken out of the soil and nothing put back into it. The end is a decreased yield of wheat, and the necessity for the thriftless cultivator seeking fresh virgin soil on which to resume his old unscientific and wasteful but, for the time being, profitable agriculture. He is, in a word, not charging to revenue alone the interest of his money; he is every year adding to it a part of the principal also, with the result that in time he finds that he has no capital with which to work. If he sold every year an acre of his farm, and ate, drank, dressed with the sum received, he could not more effectually accomplish his ruin than by the method he is adopting. However, this is not patent to him, for so long as land is plentiful in America—and in a few years tillable soil will be very scarce—the farmer "moves West." This is no theory. New York, Pennsylvania and Virginia have been "worn out" as completely, as wheat growing regions, as whole tracts of country along the Mississippi have been rendered useless by continued tobacco cropping. The early settlers in New England, and even in Maryland and Virginia, were not so thriftless, for though land in those days was cheaper than it is now, it cost too much labor to clear it for them to think of rendering their farms unfertile by this modern fashion of killing the goose that lays the golden egg. Their farms were, moreover, small, and their agriculture mixed. They consumed the straw grown on the soil and returned it again in the form of manure. Artificial manures were not then known, but the sea was not far off, and accordingly fish and seaweed supplied admirable fertilizer, to the thin soil on which were reared the pioneers of the Great Republic, while rotation of crops allowed a field rest until it had again recuperated its feeding properties. Even the Indians knew better. They fertilized their maize crops with the horse foot or king crab, and until this crustacean became scarce the Massachusetts farmers followed their example so satisfactorily that, early in the century, ground which would ordinarily return only 10 bushels of "corn" to the acre was stimulated by the free use of the crab and fish manure into yielding double that crop. The Virginians made much merriment out of this New England culture, but they have since discovered that it would have been better for them to have followed so good a practice.

What has been the result of this wearing out of the soil? In Illinois—no less an authority than Abraham Lincoln used to assert—the wheat fields of that once fertile State had sunk as early as 1863 to an average of 8 bushels per acre. The wheat centre has thus traveled 1,200 miles from the Atlantic seaboard, but for the present has been stopped by the barren central deserts of the Continent. Even on the extreme confines of that region wheat is beginning to prove by no means such a profitable crop as it once did. The last four seasons' bad crops in England have stimulated wheat-growing in the States to an abnormal extent. But when we reduce the boastfulness of the Western "rancher" to the hard prose of figures, we find that Great Britain, though not over one sixty-fourth part of the size of the United States, produced not much less than one-half as much wheat as did the States in 1870, and though this year the disproportion will be much higher, there is little ground for believing that it has not attained its maximum. Even France, never looked upon as especially a wheat-growing country, has in 20 years contributed more of this grain to the world than the United States during the same period. The crops even in England are more certain than across the Atlantic. Droughts, grasshoppers and rust seize the wheat of Western America something, on an average, like twice in five years; and, owing to the grain maturing so rapidly, it is rarely as heavy as that ripened more slowly in our milder climate. Maize is really the crop which suits North America best, and were it not for "corn," as the Indian grain is called, the United States would require to import part of its bread.

It may be said that in time the Americans will learn a better system of farming, and "feed the land," in order that the land may, according to the English axiom, feed them. But it is doubtful whether the average Western farmer will ever attain this stage of agricultural wisdom. In the first place, he will never bring himself to do so as waste land is to be had. He will rather sell out and "move West," or "go into business," for agriculture is not the industry which the average energetic American affects. In the second place, he cannot for the present afford to manure his land. To bring fish refuse from the coast, or town sewage from the cities, would cost too much, while guano, superphosphates, and other artificial fertilizers—the use of which at once abridges the English farmer's profits and keeps his land in a condition fit to make these profits, such as they are, permanent—would be still further beyond the Illinois, Nebraska and Missouri grain grower's reach. To use them would so decrease his moderate returns as to put it out of his power to land wheat in England, even in the best of seasons, without a loss to himself or to the exporter. But every year that he hesitates about putting back into the soil what he is taking out—and is content with the profit which the difference between these two extremes represents—will make it more and more difficult for him ever to do so.

Oregon and California have been represented as countries likely in time to be "wheat centres." This is, perhaps, a sanguine prospect. Oregon has no great extent of land capable of growing grain, except in the Willamette and a few other valleys, chiefly to the west of the Cascade Mountains, and in these regions the farms are all small, and devoted—luckily for their owners—to mixed agriculture. Hence the settlers are prosperous, though not very wealthy. In 1878 about seven millions of bushels of wheat were received in Liverpool from the country of California. The best lands will yield 30 bushels to the acre. But the farmer is not content with this, for having reaped his 30 bushels at a profit of about $10, he depends upon nature for returning him the next year a volunteer harvest of some 18 bushels, in addition to the plentiful crop of weeds, which cost him double plowing and absolute rest the third year, in order to extirpate them, and at the same time raise the soil to something like its old fertility. Still, owing to the use of manure, the Oregon and Washington Territory farms have not been worn out to anything like the extent which the larger ones in California and the "Western States" proper have.

The Californians love to do things on a grandiose scale—the greater the more pleasing to them. Hence large wheat "ranches" are the rule in that State, though the amount of soil capable of being tilled is much less than in many districts in the Mississippi Valley, and the cost of land very much higher. In consequence of the existence of old Mexican grants, there are still large tracts in California held in the hands of single proprietors. For instance, Mr. Mitchell, in the San Joaquin Valley, has 90,000 acres under wheat, and is ambitious to have 100,000; and Dr. Glen, in Colusa County, has 45,000 acres under the same crop; and another tiller named Reavis has a modest little farm of 15,000 acres. But though these "ranchers" get 85 cents per bushel for their wheat, they do not find their business so profitable as imagined. Indeed, some of them have in ten years cleared nothing, but have managed to get into debt on a scale quite as gigantic as their farms.

Large wheat farming does not pay. It is too precarious, as is proved by the failure of those who have tried it in Minnesota and other States. To use a familiar phrase, the large wheat grower puts his eggs all into one basket. If wheat is high, he makes a great profit; if, on the other hand, wheat—his only crop—fails, then he is ruined, for he has no reserve, as have those who practice mixed farming. These miles of wheat have a bare, ragged appearance. There are no barns or farm buildings. The ears are snipped off by a wonderful machine, which also threshes and sacks the grain on the field. The straw is then either burnt or disposed of in various ways, none of which allow of the soil reaping any advantage from it. The same plan is pursued in South Australia. In the colony there are no large farmers, but the "cockatoos," or little cultivators, are equally thriftless. They use no manure, but burn off the stubble, and, as a result, are so impoverishing the soil that in a few years its fertility will have greatly decreased. Of course, some soils, both in Australia and America—but in America more than Australia—will bear continual cropping for a long time. But the tales of 80 bushels to the acre must be received with many grains of salt, and—at best—as relating only to special patches of land, and not as anything like an average of even a single State. Even in California all "pumpkins" are not so gigantic as those which about this time of the year begin their perennial rounds in the American newspapers. The truth is, that the average return of wheat land in America is only eleven bushels per acre, lower than in any country except Russia, where it is only five and a half, and only one-third of what the little Danish farms, on which all the straw is consumed, yield to the more thrifty cultivator. The outlook of the British farmer is not quite so bad as he imagines, or as some dubious friends of his would have him to believe. All things, it is said, come to the man who can wait; and if the English agriculturist has only sufficient staying power, the facts above narrated indicate that, in all likelihood, he will again have his day.—*Standard.*

NEWS.

EVERYBODY READS THIS.

ITEMS GATHERED FROM CORRESPONDENTS, TELEGRAMS AND EXCHANGES.

The Cockle Separator Mfg. Co., of Milwaukee, Wis., is crowded with work, and their sales have been heavier during the past month than in any other month this year.

The Cockle Separator Mfg. Co., of Milwaukee, Wis., has sold in the past month 18 of their largest size machines in Minneapolis, Minn.

The new crop in the different States is so full of cockle that millers say they could not do without the cockle separator, manufactured by the Cockle Separator Mfg. Co., of Milwaukee, Wis.

The Cockle Separator Mfg. Co., of Milwaukee, Wis., are building their machines with a capacity from 15 bushels up to 240 bushels per hour.

Messrs. Stewart & Douglas have ordered three cockle machines from the Cockle Separator Mfg. Co., of Milwaukee, Wis., for their new oat-meal mill at Chicago.

Messrs. E. Woodyear & Co., of Baltimore, Md., have purchased one of the largest size cockle machines with oat separator combined from the Cockle Separator Mfg. Co., of Milwaukee, Wis.

The Wells Flouring Mill Co. at Wells, Minn., have put in one of the Cockle Separator Mfg. Co.'s largest size cockle machines with oat separator combined.

The Kurth cockle separator, manufactured by the Cockle Separator Mfg. Co., of Milwaukee, Wis., is an indispensible machine in every mill, and all mills in course of construction are puttting it in.

Millers will save the cost of buying a special oat separator, when purchasing the combined oat and cockle separator manufactured by the Cockle Separator Mfg. Co., of Milwaukee, Wis.

Write to the Cockle Separator Mfg. Co., of Milwaukee, Wis., for their illustrated catalogue, which gives a full description of their machines.

The Philadelphia Commercial Exchange has passed a resolution adopting the cental system for all transactions in grain, flour and seeds, from the 1st day of January, 1880.

An elevator was burned at Hastings, Neb., Sept. 16th.

Peter Provost, of Appleton, Wis., patentee and manufacturer of the Victor wheat heater and drier, has just furnished four of his excellent heaters to Barney Demoss & Co., of Roscoe, O.

The Russian Minister of Finance recently declared publicly at Nijni Novgorod that he intends very soon to prohibit the importation of iron into Russia duty free.

The oat meal mill of Kiser & Pierson, of Ottumwa, Iowa, burned Sept. 12th. Loss, $18,000; insured, $15,000. The fire was first observed by a sheet of flame bursting through the roof of the drying kiln, and it burned down in just thirty-five minutes.

New flouring mills are being built at Olivia, Minn.; Jasper, Ga.; Holmes City, Minn.; Comanche, Ia.; Evansville, Ind.

Exportation of American whisky to foreign countries has increased very largely during the present year, as the cheapness and abundance of the raw spirit has offered to merchants large opportunities of profit. It is the most compact and condensed form in which grain can be sent abroad.

The revival in the iron industry has sent a good many vessels into carrying iron ore that ordinarily belong to the grain fleet, thereby cutting down the supply of grain vessels so largely as to allow owners to advance freights to paying figures.

The man that secures the right to construct an aqueduct around the falls at Sault Ste. Marie, for water power purposes, may find himself in possession, a few years hence, of a franchise worth a pretty penny.

Henry Schultz, of Scott, Sheboygan Co., Wis., is building a new 3-run mill. Smith Bros. are doing the work.

A. M. Grau, formerly of the firm of Asmuth & Grau, of Milwaukee, is locating at Fargo, Dakota, and intends to build a flour mill.

The 4-run mill of A. B. Rarey, Grove Port, O., thoroughly overhauled, refitted and refurnished by C. F. Miller, of Mansfield, O., and started about Aug. 20th, is running to its full capacity night and day, and the quality of flour made by this mill is not surpassed by any *straight grade* in that State. This mill is near the city of Columbus, and we are told there is no brand of flour in the city so much sought after, and appreciated as the Grove Port Mill's flour. The millwright work was done under the superintendence of Mr. G. W. Bliss, of Mansfield, O., and Mr. D. D. Van Degrift, formerly of Zanesville, O., is head miller.

Edward P. Allis & Co. have closed a contract with the Winona Mill Co. for a 600-horse power compound engine and steel boilers. This will be the finest steam power possessed by any flouring mill in the United States.

The Star & Crescent Mills, of Chicago, have ordered an outfit of porcelain rolls from Edw. P. Allis & Co.

S. B. Pierson, of Lawrence, Kansas, has purchased the magnificent roller mills which Edward P. Allis & Co. had on exhibition at the St. Louis Fair.

A. Fredenhagen, St. Charles, Ill.; M. Range, Raymond, Ill.; and Mr. Kertochwell, of Dayton, Ohio, have ordered porcelain rolls of Allis & Co.

Edward P. Allis & Co. have orders for over 100 porcelain roller mills during the past month.

The large elevator at Minneapolis is well along. All the machinery is furnished by E. P. Allis & Co., and the power will be a 24x48 Reynolds-Corliss engine.

E. T. Archibald, of Dundas, Minn., are putting in an 18x48 Reynolds-Corliss engine, built by E. P. Allis & Co.

Edward P. Allis & Co. are remodeling the Star & Crescent Mills, Chicago, to the roller system.

Edward P. Allis & Co., of Milwaukee, have shipped two car-loads of machinery a day for the past 60 days. They are running day and night with a force of 700 men, and have now orders for 23 Reynolds-Corliss engines, besides their large milling contracts.

Edward P. Allis & Co. have been engaged to entirely remodel one of the largest mills in England. This mill now has 48 run of stone, and Allis & Co. will change it entirely to their roller system, which is being universally adopted by the larger mills of this country.

At a recent trial of one of Allis & Co.'s Reynolds-Corliss engines a duty was obtained of 1 90-100 pounds of coal per indicated horse power per hour. This is the every-day work of the engine, and there are but few, if any, engines in the country that can equal it.

The Milwaukee Middlings Millstone Co. are furnishing a 5-run mill for Messrs. Schlegel & Koenig at Saukville, Wis.

The five hundred barrel mill being built in Milwaukee by the Milwaukee Middlings Millstone Co., is progressing rapidly. This will be, when finished, the most complete flour mill in this country.

The Milwaukee Middlings Millstone Co. are furnishing twelve 16-inch mills to Messrs. McMoran & Co., at Port Huron, Mich., and overhauling their mill generally.

The Milwaukee Middlings Millstone Co.'s business still increases, and their little mills are becoming more popular every day.

The Milwaukee Middlings Millstone Co. will start up Mr. R. P. Owen's mill, at Anoka, Minn., some time during October.

The Milwaukee Middlings Millstone Co. are building a new 3-run mill for Messrs. Lodde & Son, Sauk City, Wis.

The Milwaukee Middlings Millstone Co. have orders for over one hundred and fifty little mills.

The Milwaukee Middlings Millstone Co. are enlarging their stone shop again in order to keep pace with their orders.

Mr. Geo. A. Granger, of New Lexington, O., whose new 4-run mill has been running about a month, is proving a success, and he thinks it is second to none in his part of the state. The burrs, bolting cloth and all the machines and materials were furnished by C. F. Miller, of Mansfield, Ohio.

Mr. Henry Wolf, of Plymouth, O., has lately made additional improvements, and his mill, as furnished and arranged by C. F. Miller, of Mansfield, O., is doing first-class work, running almost entirely on custom grinding.

C. F. Miller, of Mansfield, Ohio, has by special contract made very extensive improvements in the flour mill owned and operated by the Brewster Mill Co., Akron, O., putting in new burrs, separators, smutters, brush machines, bran dusters, wheat heaters and other materials, also has re-clothed their bolts, making the necessary changes, so as to conform to the improved system. Mr. Wm. Mander is head miller, and with his experience and capability as a miller we may expect good results. Mr. C. Parker, millwright, of Mansfield, O., has had charge of the work. The work is about completed, and the mill will be running by Sept. 25th.

Messrs. Pickering, Grant & Co., of Zanesville, O., are determined to be up to the times in mill improvements, and having from time in the the last two years added purifiers and other new improvements, now have their mill in condition to make, and are turning out the best quality of flour made in that city. Their bolting cloth and other materials were furnished by C. F. Miller, of Mansfield, O. These mills are in charge of Mr. Bower, who has become noted as a miller of the first class.

Messrs. Commins & Allen, of Akron, O., are among the leading millers of Ohio, and seem determined to avail themselves of every advantage to be gained in the improved mode of milling. They are making some changes in their system of bolting, and adding some new machinery, also adding 2-run of Munson's 48-inch best selected millstones, supplied by C. F. Miller, of Mansfield, O.

The flour mills of Mansfield, O., though constantly running night and day, are unable to supply the demand for their flour. The mill of Messrs. Hicks, Brown & Co., formerly a 6-run mill, have lately added two run of 48-inch Munson burrs, and contemplate adding three or four more run of the same size, which they feel compeled to do to meet the increasing demand for their product. The "City Mills," Messrs. Gilbert, Waugh & Co., proprietors, have also found it necessary to increase their capacity, and have lately added another run of 48-inch Munson burrs, supplied by C. F. Miller, of Mansfield, O.

Pulleys and Belts.

The evil of sliding or slipping of the belt on the pulley is experienced by all who use them, and various means have been devised to avoid it for years past.

One method is to cover the pulley with wood, another to strew powdered rosin on the inside of the belt. The latter is soon pressed into the leather, and contributes largely to its speedy destruction. A wood covering gets polished in a short time and is then as slippery as iron. A convexity of the rim of the pulley is very effective to prevent the dropping off of the belt, especially when the pulley has a horizontal position; but it only counteracts the slipping to a very small extent. Some years ago, it was found that leather completely prevented the sliding of belts on pulleys. The reason is obvious. The friction of leather on leather is more than five times that of leather on iron, and as leather can be roughened and easily kept in that condition, it is very evident that the sliding of belts cannot easily take place on pulleys covered with leather, not even when the belts have to transmit the very highest amount of power.

Besides the evident advantage that results from the avoidance of the slipping, a leather covering on the pulley preserves the belt; in the first place the belt does not require tightening so hard, the friction being considerably increased; and in the second place because there is no necessity for a rapid trotting of the belt. This rapid trotting is generally caused by the fact that, under the influence of the heat produced by friction, the tannic and other acids contained in the leather of the belts combine chemically with some of the iron of the pulleys, forming a hard compound on the belts which produces rottenness. The operrtion of covering is very simple and can be done and renewed by every intelligent miller.

BIG WORDS.—Big words are great favorities with people of small ideas and weak conceptions. They are sometimes used by men of mind, when they wish to use language that may best conceal their thoughts. With few exceptions, however, illiterate and half educated persons use more "big words" than people of thorough education. It is a very common but egregious mistake to suppose that long words are more genteel than the short ones—just as this sort of people imagine high colors and flashy figures improve the styles of dress. These are the kind of people who don't begin but always "commence." They don't live, but "reside" They don't go to bed but mysteriously "retire." They don't eat or drink, but partake of "refreshments." They are never sick, but "extremely indisposed;" and instead of dying, at last, they "decease." The strength of the English language is in short words—chiefly monosyllables of Saxon derivation; and people who are in earnest seldom use any other. Love, hate, anger, grief and joy express themselves in short words and direct sentences; while cunning, falsehood and affectation delight in what Horace calls *verba sesquipeddlia*—words "a foot-and-a-half" long.—*Exchange.*

Conundrums.

What is that which a cat has, but no other animal? Kittens

What did Queen Elizabeth take her pills in? In cider (inside her).

Why is a dead doctor like a dead duck? Because they both have done quacking.

If I were to see you riding on a donkey, what fruit should I be reminded of? A pair.

How is it that a man more thoroughly appreciates good coffee when he's smoking than at any other time? Because then he's smoker (mocha) himself.

Why was Blackstone like an Irish vegetable? Because he was a common tatur.

Why is an egg like a colt? Because it isn't fit for use till its broken.

If a Colt's pistol has six barrels, how many ought a horse pistol to have? Give it up.

Why is a professional thief very comfortable? Because he takes things easy.

Why are cowardly soldiers like tallow candles? Because when exposed to the fire they run.

When does a man have to keep his word? When no one will take it.

When are kisses sweetest? When sirup-titiously obtained.

Why are two young ladies kissing each other an emblem of Christianity? Because they are doing unto each other as they would men should do unto them.

Why are pipes all humbug? Because the best of them are meer-shams.

How can you get a new set of teeth inserted gratis? Go into somebody else's garden where they keep a big dog, and kick him.

Why is a good husband like dough? Because a woman needs him.

State the difference between a grocer selling a pound of sugar, and an apothecary's boy with a pestle and mortar? One weighs a pound, the other pounds away.

Why is it easy to break into an old man's house? Because his gait is broken and his locks are few.

When does a son not take after his father? When his father leaves him nothing to take.

Is there a word in the English language that contains all the vowels? Yes, unquestionably.

Why is a woman's beauty like a $10 greenback? Because when once changed it soon goes.

Why should not ladies and gentlemen take castor oil? Because it is only intended for working people.

How many sides has a pitcher? Two; inside and outside.

What is the proper length for a ladies' crinoline? A little above two feet.

Friendly Counsel.

1. Resist the temptation of circulating ill reports; spread them not at all.

2. If you cannot speak well of another, at least do not speak ill of him.

3. Never speak ill of another behind his back. Why should you consider his character of less value than your own?

4. Speak of others as you would were they present; speak as a friend of him who is absent and cannot speak for himself.

5. Consider yourself the guardian of the character of those who may be absent, as you would wish others to guard your character in your absence.

6. Whenever it may be needed to mention anything to the disadvantage of another, let it be done with truthfulness, tenderness, humility, and with the recollection of how much has been forgiven thee.—*Ex.*

A CURE FOR DRUNKENNESS.—The *Scientific American* contains an account of an experimental test of Liebig's theory for the cure of habitual drunkenness. The experiment consisted of a simple change of diet, and was tried upon twenty-seven persons, with satisfactory results. The diet proposed is farinaceous, and in the cases reported was composed of maccaroni, haricot, beans, dried peas and lentils. The dishes were made palatable by being thoroughly boiled and seasoned with butter or olive oil. Breads of a highly glutinous quality were used, care being taken to prevent their being soured in course of preparation. In this explanation of the theory, Liebig remarks that the disinclination for alcoholic stimulants, after partaking of such food, is due to the carbonaceous starch contained therein, which renders unnecessary and distasteful the carbon of liquors. If this plan proves successful, it will be the medium of effecting a more thorough reform than years of legislative enactment or spasms of social work can possibly accomplish.

A LUMBER PRESERVATIVE.—Quicklime, as a preservative of timber, has been made the subject of experiment by M. Lostal, a French railway contractor, who applied it to railway sleepers. He puts the sleepers into pits, and covers them with quicklime, which is slowly slacked with water. Timber for mines must be left for eight days before it is completely impregnated. It becomes extremely hard and tough, and is said never to rot. It is also stated that beech-wood prepared in the same manner has been used in several ironworks for hammers and other tools, and is reputed to be as hard as iron, without losing the elasticity peculiar to it. The *Builder* (London) says that according to the *Kurze Berichte*, lime slacked in a solution of chloride of calcium is used at Strasburg as a fire-proof and water-proof coating for wood.

The Grain Trade of New York.

One cannot cross either of our river ferries, still less circumnavigate the city or take a few hours' sail up the Hudson, without being amazed at the movement of breadstuffs visible on all sides. On the Hudson River Railroad, and all the other iron thoroughfares converging upon this city, long trains of grain cars are almost constantly in sight, while on the river vast rafts of grain laden canal boats more than rival the railway trains in carrying capacity. It is no uncommon thing for one of the large towing steamers to bring down the river fifty, sixty, or more canal boats, each carrying from eight to fourteen thousand bushels of wheat, corn, or other grain. In single file, one of these vast tows would make a continuous line of canal boats more than a mile in length; while an equivalent tonnage in cars would require twenty-five or thirty 40-car trains, or from six to seven miles of cars, according to the nature of the grain.

Not unfrequently four or five ocean steamers, and a fleet of other shipping, may be seen about the great railroad elevators at 65th street, receiving cargoes of grain and cattle. At each of the piers of the numerous European steamship lines, floating elevators are busy transferring grain from canal boats; others are at work in midstream alongside ocean steamers and sailing ships at anchor; and at the extensive warehouses along the shores, permanent or floating elevators are similarly engaged in the rapid handling of the staff of life, brought to their doors either in canal boats and barges, or in cars floated, on boats made for the purpose, from the piers of the Erie and other railways.

The magnitude of this grain trade of New York may be judged from a few statistics. During the week ending September 6, the receipts at this port were: Flour, 112,124 barrels; wheat, 2,271,492 bushels; corn, 1,327,014 bushels; oats, 279,355 bushels; rye, 139,886 bushels; barley, 1,100 bushels—about as much as was received at all the other ports together. During the same week the exports of breadstuffs from New York included 113,224 barrels of flour, 2,519,409 bushels of wheat, 914,628 bushels of corn, 2,996 bushels of oats, 103,701 bushels of rye. At the last date named, September 6, the amount of grain in our city granaries and afloat in our harbor, embraced in round numbers, 3,750,100 bushels of wheat, 3,100,000 bushels of corn, 810,000 bushels of oats, 160,000 bushels of rye, and 26,000 bushels of barley. The grain of all sorts in store at New York was 6,332,085 bushels. The storage capacity of the port is about 12,000,000 bushels, but the present active demand for grain for foreign shipment, due to the general deficiency of European crops, prevents any large accumulation here. Indeed, the bulk of shipping devoted to the transportation of grain from this to foreign ports is at this season something unprecedented in the history of the world. During the week ending September 10 (six days), the clearances of flour and grain for Europe alone embraced eighty-five vessels (45 barks, 30 steamships, 4 ships, 5 brigs, 1 schooner), carrying a grand total of 78,112 barrels of flour, 1,942,248 bushels of wheat, and 1,249,092 bushels of corn. The promise for the current week is still greater.

During the year 1878 the receipts of grain alone at this port were, by canal, 63,663,049 bushels; by vessels, coastwise, 1,090,236; by rail, 63,960,486 bushels—a total of 128,613,771 bushels. Changing flour and meal to their equivalents in bushels, the receipts of grain, flour, and meal were, during the year, 152,862,170 bushels. During the same period the export of cereals from New York amounted to 107,819,044 bushels, the exports from all the other Atlantic ports together (including Montreal) being 104,678,187 bushels—evidence enough that our city still holds the lion's share of this trade. To describe in detail the manner in which the grain trade is conducted here would require a volume. A rough outline of it will have to answer.

As already indicated, the vast stream of life-sustaining wealth flows to us through channels of two distinct sorts—by water and by rail. The inflow coastwise is too small, relatively speaking, to demand especial notice. The Erie canal, with the Hudson River on one side and the railways on the other—chiefly the New York Central and Hudson River Railroad, the Erie road and the Pennsylvania Central—divide the traffic about equally. And the grain received by each route has, speaking generally, its particular treatment. That which comes by rail is graded according to rules agreed upon by the New York Produce Exchange, and is sold by grade, the identity of the grain being lost. The grain received by water, on the contrary, is chiefly handled without grading, the identity of lots being preserved. In the latter case the consignee receives the identical grain shipped to him, say from Buffalo or any point farther West; in the former, he receives not the grain billed to him, but a certificate for so many bushels of wheat, corn, or other grain of a specified grade, his particular shipment being, for economy in warehousing and handling, mixed with other receipts of the corresponding kind and grade after it has been officially inspected, graded and weighed. The quantity of grain represented by each certificate is limited to 8,000 bushels, except for oats, for which the certificates are not to exceed 10,000 bushels each. These certificates, which are dated and numbered consecutively, state in detail the kind, grade, and quantity of grain represented by them, and are furnished to the consignee before noon of the same day, at which time the business of the Produce Exchange begins. On the floor of the Exchange all ungraded grain is sold by sample, the various samples being exhibited on their proper tables, in small paper boxes duly labeled, the amount of the lot, and the place where it is stored or afloat, being fully set down.

The graded grain is represented by type samples, so that dealers can see exactly what their certificates call for. A buyer purchases for exportation from various sellers, say, 100,000 bushels of No. 1 white winter wheat, or any other of the dozen different grades of winter wheat. He handles no grain, but receives instead certificates representing that amount of grain of the specified kind. On the presentation of such certificates to the railway company or companies issuing them, freight and accrued charges being paid, the companies deliver the grain out of their general stock of that grade, at such point in the harbor as may be designated.

A vast amount of loading is done at the elevators at 65th street and North River. A larger amount is transferred by floating elevators, which draw up alongside the great steamers as they lie in their accustomed slips, receiving or discharging their freight. There are besides numerous stationary elevators belonging to large grain-dealing firms, at the lower end of New York Island and along the Brooklyn shore; and the Erie Railroad Company are building at the Jersey City terminus of that road an elevator which promises to more than rival those of the New York Central.

The speed at which grain is transferred at these elevators is amazing to one not familiar with their management. A shaft inclosing an endless chain of buckets is thrust into a laden car or canal boat, and instantly the grain begins to travel up the long incline to be delivered on the opposite side at a rate often exceeding fifty bushels of wheat a minute, or a larger quantity of lighter grain.

The report of the Produce Exchange for 1878 shows the authorized charges for handling grain at this port to be, per bushel: weighing, ½ cent; elevating from canal boats, ¾ cent; for delivering on board single deck ocean vessels, $8; on ocean vessels in bags, $6.25; on coastwise vessels, $2.50. The expenses on grain to shippers by rail from the interior are: for inspection, 25 cents a car; elevation, ½ cent a bushel; half weighing, ½ cent a bushel; storage, ¼ cent a bushel. At the New York Central elevator the charge for bulking grain with storage (10 days) is ¼ cent a bushel. The Erie and the Pennsylvania Central Companies charge, for holding grain on storage in lighters, ¼ cent a bushel for each 10 days. The charge for delivering afloat ungraded grain in railroad lighters, including elevation from boats, ranges from 3 cents to 1½ cents a bushel, according to the bulk of the lots handled. The authorized charge for towing laden canal boats about the harbor ranges from $5 to $11, according to distance. The freight tariff from the great grain-distributing point of the West, Milwaukee or Chicago varies with the season, the style of carriage, the degree of competition between the railways, or between water and rail carriage. In the winter, when the lakes, the Erie canal, and the Hudson river are closed, the rate rises as high as 25 cents a bushel. On the opening of the water routes the rates fall, dropping at midsummer as low as 8 or 9 cents by rail and 6 cents by water. The average rate by water during 1878 was 7¼ cents; by all rail routes, 12 cents. As an important link in the water route, the Erie canal is of infinite importance. The existing railways alone would be incompetent to do the carrying required at the time required (assuming the foreign demand unimpaired); besides, by having the monopoly, their rates would not only be made higher than now obtains, but possibly so high as either to destroy the possibility of our competing the price with Russian wheat in Liverpool, or to make competition possible only at the sacrifice of all profit to our wheat-growers. It is worth noting in this connection that during the present year average cost of transporting wheat from northern Minnesota to New York—26 cents a bushel—is less than was the cost of the carriage of wheat by lake and canal from Chicago twelve years ago.

IMPORTANT NOTICE.

TO THE PARTY RECEIVING THIS PAPER WHO IS NOT ALREADY A PAID SUBSCRIBER.

We hereby extend to you a cordial invitation to become a subscriber to the UNITED STATES MILLER. We shall endeavor to make it of the greatest possible use and benefit to the milling fraternity, and no mill should be without it. The best talent that we can obtain in this and other countries will contribute to its columns, which will also be enriched by carefully translated articles on subjects of interest to the craft. Subscription price, $1. Enclose money or stamps in an envelope, seal carefully, and send at our risk. By return mail you will receive a receipt therefor. Address

THE UNITED STATES MILLER,
Milwaukee, Wis.

Christian Bros. & Co. have ordered 80 pairs of rolls of Edward P. Allis & Co.

Situations Wanted, etc.

Millers, Engineers, Mechanics, etc., wanting situations, or mill-owners or manufacturers wanting employes, can have their cards inserted under this head for 50 cents per insertion, cash with order.

SITUATION WANTED—The advertiser wishes an engagement as Book-keeper in a mill or any other manufacturing business in any part of the country, is a thorough and practical Book-keeper and can be well recommended. Address O. P., *United States Miller* Office, Milwaukee, Wis. ootf

WANTED—A situation by a miller of 18 years' experience, understands thoroughly both merchant and custom work—either old or new process; am industrious, honest and temperate; have a family. A place likely to be permanent preferred; do not like to be changing. Address, stating terms, C. C. ARNOLD, Jefferson, Jefferson Co., Wis. sep

TO MILLWRIGHTS—Wanted a situation at Millwrighting. I understand a part of it. Wages no object. I have three inventions, and am working at two more, all connected with the milling business To the man that will take hold of me and give me work for one year I will give him an interest in my inventions. Address JOHN W. PERTER, Belleville, St. Clair Co., Ill. In care of M. F. Seifert. sep2t

SITUATION WANTED—In either a merchant or custom mill; have had eight years experience in the business and guarantee satisfaction in all branches of the business; am a single man; willing to go anywhere. Good references given if desired. Parties answering this advertisement please state terms All letters answered promptly. Address MILLER, Runch's Gap, Clinton county, Penn. autf

TO MILL-OWNERS—Situation wanted by an experienced Miller to take charge of a mill or stone dressdressing in a new process mill. Have worked the new process since the beginning of manufacturing patent flour in this country, making from 20 to 68 per cent of patent flour. Reference furnished from the best of Milwaukee mill-owners if necessary. Any one in want of my services please address No. 221, Grand Avenue, third floor, Milwaukee, Wis. ault

SITUATION WANTED—In new process mill; have had valuable experience both in building new and remodeling old mills on the system of high grinding. I desire to make an engagement with parties about to build new mills or change old ones, and will guarantee satisfaction. Am a practical Miller, and can take the place of a millwright in every detail and have a number of improvements in connection with high grinding not generally in use. Have a good knowledge of all the latest milling machinery, and believe I can make myself profitable to any mill owner on the new process. Wages an after consideration. Correspondence solicited. Address H. B. SHEARS, North Lake, Wis. autf

For Sale or Exchange.

Advertisements under this head $2 per insertion, cash with order.

FOR SALE—A new Steam Merchant Mill, with 4 and 3 feet burrs. Everything in good running order, so as to make the best flour. Will sell below cost price. Enquire of H. EULER, Desota, Jefferson Co., Wis. oc

FOR SALE—At a ruinous price—My Water Power Grist Mill. On investigation their mill will be found to be the cheapest property ever offered. For particulars address L. K. VAUGHAN, Farragut, Fremont Co., Iowa. oc

FOR SALE—At a great sacrifice—One of the best 4-run New Process Flouring Mills in Illinois; 4 stories, brick and stone; slate roof, brick smoke stack. Been running 18 months; everything is new, complete and in excellent order. Has side track, cooper shop, wagon and stock yards, and an inexhaustable fresh water pond. Wood is delivered at $1.25, and the best coal at 8 cents and less. Fuel costs only $3 per day of 24 hours. Have fine trade and custom. Give 35 pounds of flour and 10 pounds of bran for 60 pounds of wheat. Vast quantity of No. 1 winter wheat are raised here. I am 65 years of age and know *nothing* about milling, so will sell to *responsible* party on *decidedly easy terms*. No others need apply. Title is perfect. Call or address
oc C. H. HEARD, McLeansboro, Ill.

FOR SALE OR RENT—A two-run mill at one of the best points and wheat sections in Southern Illinois, with good railroad facilities for shipping to all markets. Mill new and in good running order, will sell or lease on reasonable terms. Address P. O. Box 204, Mt. Vernon, Illinois. sep1t

GRIST MILL FOR SALE AT A SACRIFICE—Merchant and custom mill, situated in Belvidere, county seat of Boone county, Illinois. The mill has four run of French burrs, and all the machinery is of best class; driven by a never-failing stream of water (Kishwake river). Mills of this class are seldom offered for sale, but the proprietor is very aged, and wishes to retire. Would sell for one-third cash down, balance on suitable terms, or would sell one-half of mill property. A person with means would do well to investigate immediately. For further particulars apply to the owner or address Box 544, Belvidere, Illinois.
au2t JAMES B. MARTYN.

FOR SALE—A one-half interest in a Grist Mill. Size, 25 x 35 feet; wing, 12 x 20. Mill is two and a half stories high. Two run of burrs; size, 3 and 4 feet. Two new Leffel wheels. Fifteen feet head in a never failing stream. Ten acres of land, a house, barns and mill sheds. School and church near by. Is located on a main road, and within 2 miles of a city of 8,000 inhabitants. Mill is in good repair and doing a fine business. Object in selling is, I am blind and want a good steady man to take entire charge of the mill. Price $2,700, with $1,000 down. Possession given in 60 days from time of sale. Address with stamp, Box 1462, Battle Creek, Mich. septf

FOR SALE, AT PUBLIC AUCTION—Valuable property, houses, and lots and salt stores. I will offer at public auction on Saturday, October 11th, the Enterprise Steam Mill, situated in the village of Enterprise, half a mile from the river, and just out of the corporation af the city of Pomeroy. Coal in abundance; costs from 2½ to 3 cents per bushel delivered at furnace door. Parties desiring to purchase are invited to correspond with the Subscriber at Enterprise Mills, near Pomeroy, Meigs county, Ohio. Terms of sale 10 per cent of purchase, money in hand; balance in ten equal yearly payments, with six per cent interest.
August 12, 1879. J. M. STRYDER.
septf.

FOR SALE—At Chippewa Falls, Wis.—A great bargain. The flouring mill property formerly owned by H. S. Allen. The mill was destroyed by fire two years ago. This property consists of an excellent *never-failing* water-power, a good substantial dam, a very heavy stone foundation for a mill, two good turbine wheels, three village lots of land, etc. This property has just come into the possession of the undersigned by foreclosure, and they will sell it for the amount of the claim, which is much less than the value of the property, and will give a perfect title to the property. An investigation will satiffy any one that there is a bargain in this property. Address
MATTHEWS BROS., FURNITURE CO.,
sep Milwaukee, Wis.

TO MILL PURCHASERS—*Reason for Wishing to Dispose—Too Much Business.*—For Sale, a desirable grist and saw mill together, both doing a good business. In good location for increasing business as well as sufficient power and population to make and dispose of 100 barrels of flour *per diem*, (*i. e.* with few additions and improvements). Situated in the pleasant Chenango Valley, and known as "Robinson's Mills," midway between the wealthy villages of Oxford and Greene, in Chenango county. Can be purchased with the above a comfortable dwelling house with each business, if required. Also a few acres of land. Water at all times; three reaction wheels by Stratton. Two good, thick wheat or buckwheat and one run of feed stones; two good bolts, elevators, smutter, sheller, etc., and the circular saw apparatus, etc. Both mills, as well as the gear, are in good condition. The saw mill has earnde $1,200 a year. This a good offer ror a reliable gentleman of means. Address,
B. A. N., care UNITED STATES MILLER,
Milwaukee, Wis.

FOR SALE—A splendid chance for a man to locate in the "Land of Flowers." A 25-horse power saw mill, with blacksmith shop and wheelwright shop attached, 3 log carts and 3 yoke oxen, a homestead covering 160 acres of land, a dwelling house located on a river, ten miles from where it empties into Charlotte harbor; plenty of water to lumber yard. This mill is situated in the thriving village of Fort Ogden, where all semi-tropical fruits are raised. Being down on the Gulf Coast we never have killing frost. Two churches and schools and good society are some of the inducements. I will sell one-half interest of the above so as to increase works. To any one wishing to come to Florida and wishing a business will do well to correspond with the undersigned.
CHAS. B. PENDLETON,
Fort Ogden, Manatee Co., Florida.

Attention, Millers!

I have invented and secured by letters patent, a new

Method of Staffing Mill-Stones!

No new staff required; it does its work perfectly; increases the capacity; makes more middlings; requires less stone dressing and less power to run the mill; will make mill-stones do as good work as can be done with rollers. Price for license to use my Patented Method, with full printed directions, $5 per run, or if required to come personally a reasonable distance to explain it $10 per run. I have also invented a

Mill-Stone Bosom Staff,

Which will shape the bosom of the stone from the eye to the grinding surface, as it should be, price $35. It is the most perfect Staff for this purpose ever invented; it will save much time and labor, and show conclusively when the stone is just right. All the persons named below are using my PATENTED METHOD OF STAFFING MILL-STONES, and many are also using my patented MILL-STONE BOSOM STAFF:

Geo. S. Smith, Milwaukee, Wis.
Bennett, Bros. & Co., Geneva, Ill.
Hotchkiss & Puhlmann, Plymouth, Wis.
E. R. Hoyt & Son, Beaver Dam, Wis.
Coman & Morrison, Fox Lake, Dodge Co., Wis.
F. Miller & Co., Watertown, Wis.
Orville Hathaway, Oconomowoc, Waukesha Co., Wis.
Henry Roder, Ogdensburg, Wis.
J. S. Dunham, Depere, Wis.
A. Fredenhagen, St. Charles, Ill.
W. H. Howell, Geneva, Ill.
J. Burton, Geneva, Ill.
R. J. Haines, St. Charles, Ill.
Thompson & Co., Dixon, Ill.
Wm. Funk, Keosauqua, Iowa.
Purington, Beaumont & Co., Topsham, Me.
J. G. Schaupp, Alda, Nebraska.
T. S. Hayhurst, Portland, Wis.
Wm. H. Porter, Marshall, Wis.
Wm. Boorman, Waterloo, Wis.
Robbins & Baltzell, Madison, Wis.
Sanford, Logan & Co., Black Earth, Wis.
J. Dickson, Viola, Oregon.
Wm. Ledingham, Cedar Falls, Wis.
H. F. Lehmann, Hagerstown Indiana.
Nichols & Bradbury, Bunker Hill, Kas.
C. C. White, Valpariso, Nebraska.

Address all communications to

WM. LEHMANN,
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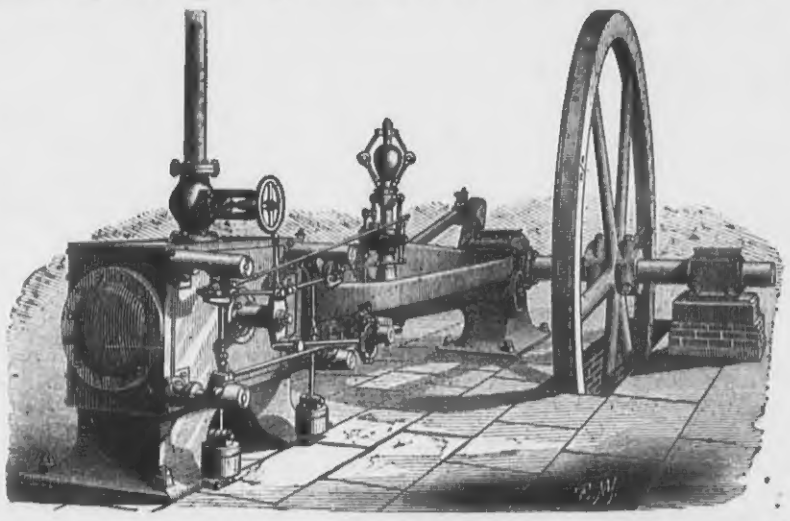
oc

ATLAS-CORLISS ENGINE!

Will Replace Ordinary Engines, Guaranteeing to Save One-Third Fuel.



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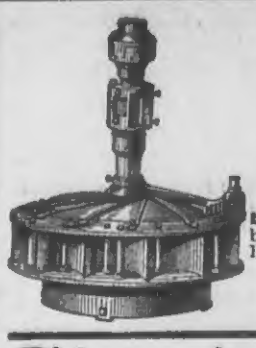

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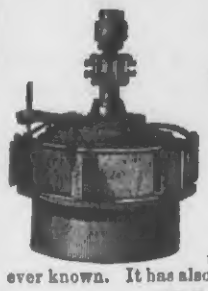

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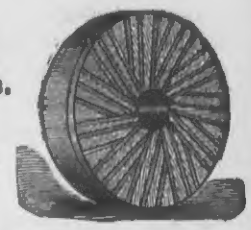

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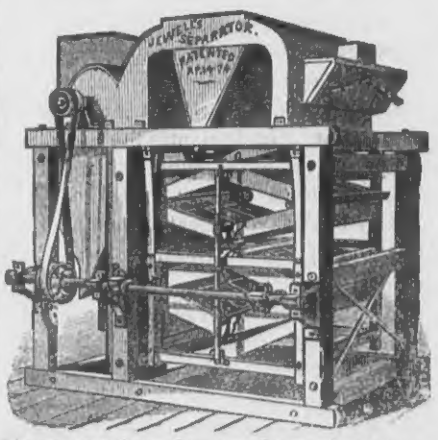

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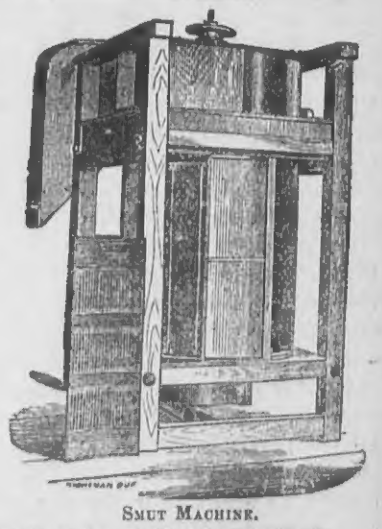

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3½	3	2½	7 "
3½	3	3	7 "
4	3½	3	8 "
4½	3½	3½	9½ "
4½	4	3½	9½ "
4½	4	4	9½ "
5	4	3½	10½ "
5	4	4	11 "
5½	4	4	11½ "
6	4½	4½	12½ "
7	5	4½	15½ "
8	5½	4½	17 "

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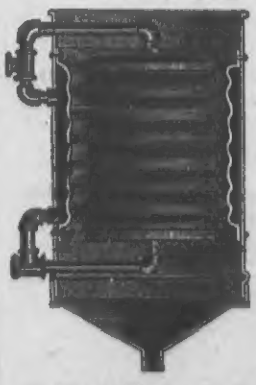

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